C. STIEFELMAYER

Manufacturer of Precision Tools

ESSLINGEN AM NECKAR

GERMANY

cSE

Established 1874

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Precision Tools of all Kinds Page 4–76
Calipers — Depth Gages —
Dial Indicators — Surface Plates —
Layout Tools — Squares, Rules —
Precision Levels

Important!

When ordering, please specify name, number, and size of the articles desired.

Jllustrations and descriptions of this catalogue may not always be up-to-date, since changes may be made when necessary.

Calipers

Our calipers are of unannealed special steel and feature

rugged construction — easy operation — attractive design — general handiness.

All "STANDARD" calipers have hardened jaws.

With the exception of Nos. 2, 3 and 5, all calipers have $^{1}/_{10}$ mm verniers, unless $^{1}/_{20}$ or $^{1}/_{50}$ mm are expressly requested. Instead of graduations in millimeters, graduations in inches with $^{1}/_{128}''$ or $^{1}/_{1000}''$ can be supplied.

The measuring range of the "Standard Off" and "Standard Mikro" calipers is indicated on pages 4—7.. On the basis of this list, the approximate ranges of the other calipers can be determined.

Calipers with open sliding head fronts belong to the "Standard" group and are designated as follows:

Standard Off	= open sliding head front
Standard Spe	= open sliding head front with points
Standard Mikro	= open sliding head front, with fine adjustment screw (precision vernier caliper)
Standard Mikrospe	= open sliding head front, fine adjustment screw, with points
Standard LS	with points for gaging holes
Standard LSG	with points for gaging holes and bevelled jaws for measuring depths of thread
Standard AS	with interchangeable points
Standard ASM	with interchangeable points, model for pattern makers
Nos. 2 and 3	These precision vernier calipers are control instruments manufactured for ranges up to 2000 mm. **The jaws are hardened along their entire measuring surface.**

Before shipment, our calipers are greased thoroughly, so that they will not rust even after a considerable period of time. As this grease becomes very tough in the course of time, clean the tools with kerosene (paraffin), gasoline or machine oil before using. They will then operate smoothly and easily.

Calipers of unannealed special steel
with open sliding head front, unremovable set screw

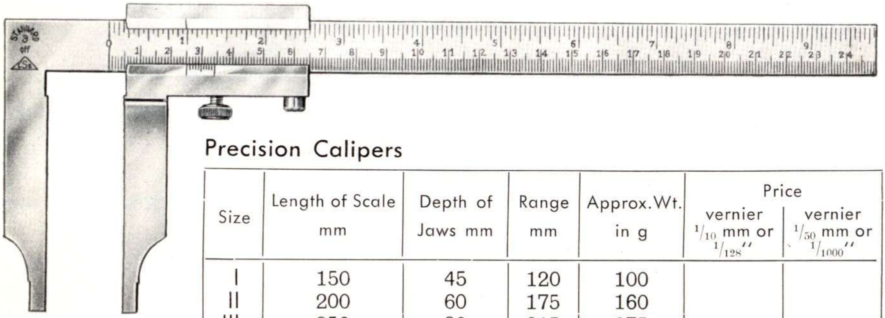
Standard Off beam and jaw
slide and jaw } of one piece

Standard Spe beam, jaw and point
slide, jaw and point } of one piece

Graduation: Sizes II, III and IV: front in mm with $^1/_{10}$ or $^1/_{20}$ or $^1/_{50}$ vernier, and $^1/_{16}''$ with $^1/_{128}''$ or $^1/_{1000}''$ vernier.
Back with depth gage in mm.
Sizes V and VI: front only one scale in mm, with $^1/_{10}$ or $^1/_{20}$ or $^1/_{50}$ vernier, or in inches with $^1/_{128}''$ or $^1/_{1000}''$.
Back without graduation.
Unless otherwise specifically requested in order, our standard model, i. e. with $^1/_{10}$ vernier will be delivered.

Nibs: Jaws have nibs of 5, 10 or 20 mm for measuring holes. Ends hardened.

Standard Off

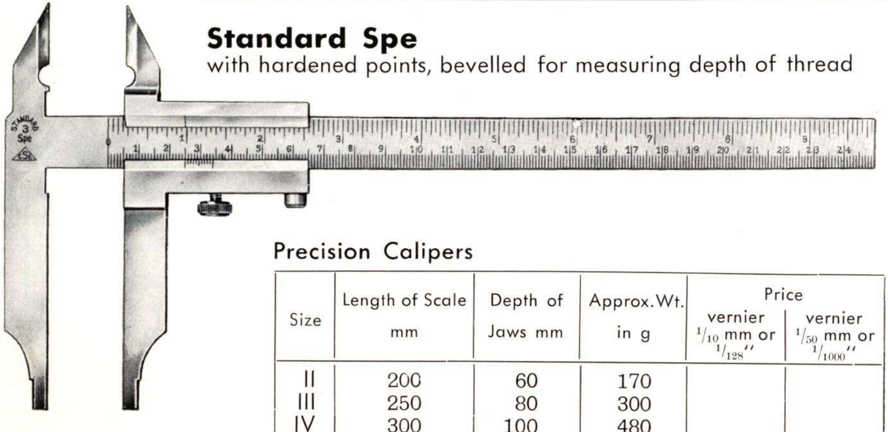


Precision Calipers

Size	Length of Scale mm	Depth of Jaws mm	Range mm	Approx. Wt. in g	Price vernier $^1/_{10}$ mm or $^1/_{128}''$	Price vernier $^1/_{50}$ mm or $^1/_{1000}''$
I	150	45	120	100		
II	200	60	175	160		
III	250	80	215	275		
IV	300	100	270	450		
IVA	390	100	350	500		
					mm or inch graduation on one side only	
V	470	120	420	730		
VI	700	150	640	1370		

Standard Spe

with hardened points, bevelled for measuring depth of thread



Precision Calipers

Size	Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price vernier $^1/_{10}$ mm or $^1/_{128}''$	Price vernier $^1/_{50}$ mm or $^1/_{1000}''$
II	200	60	170		
III	250	80	300		
IV	300	100	480		
				mm or inch graduation one side only	
riveted points V	480	125	820		
riveted points VI	700	150	1420		

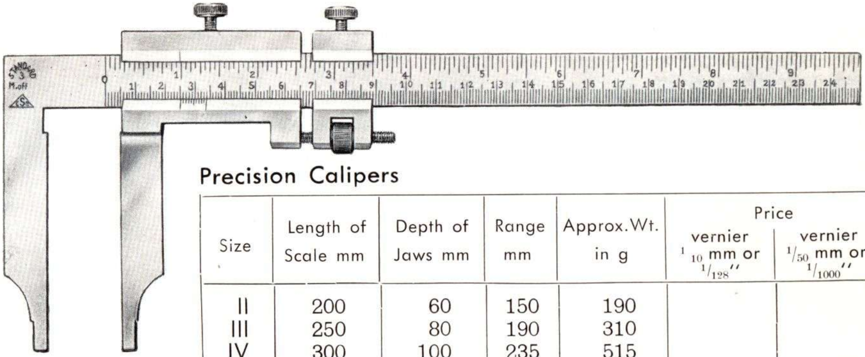
Calipers of unannealed special steel
with open sliding head front, unremovable set screw

Standard Mikro beam and jaw
slide and jaw } of one piece
Standard Mikrospe beam, jaw and point
slide, jaw and point

Graduation: Sizes II, III and IV: front in mm with $^1/_{10}$ or $^1/_{20}$ or $^1/_{50}$ vernier, and $^1/_{16}$'' with $^1/_{128}$'' or $^1/_{1000}$'' vernier.
Back with depth gage in mm.
Sizes V and VI: front with only one scale in mm, with $^1/_{10}$ or $^1/_{20}$ or $^1/_{50}$ vernier, or in inches with $^1/_{128}$'' or $^1/_{1000}$''.
Back without graduation.
Unless otherwise specifically requested in order, our standard model i. e. with $^1/_{10}$ vernier will be delivered.

Nibs: Jaws have nibs of 5, 10 or 20 mm for measuring holes. Ends hardened.

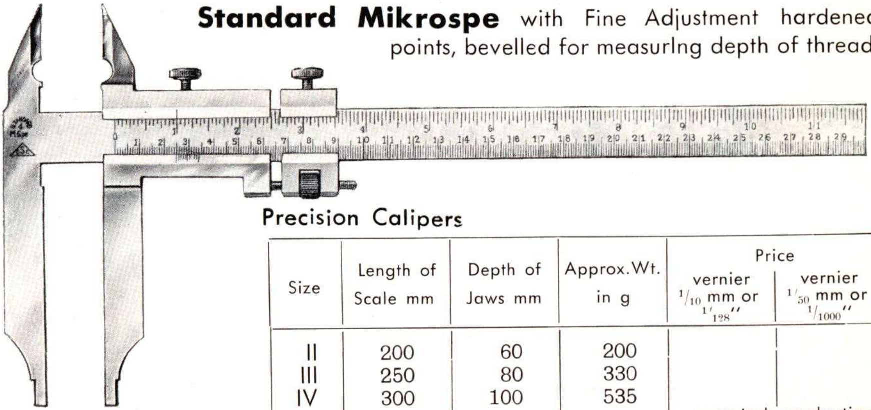
Standard Mikro with Fine Adjustment



Precision Calipers

Size	Length of Scale mm	Depth of Jaws mm	Range mm	Approx. Wt. in g	Price	
					vernier $^1/_{10}$ mm or $^1/_{128}$''	vernier $^1/_{50}$ mm or $^1/_{1000}$''
II	200	60	150	190	mm or inch graduation on one side only	
III	250	80	190	310		
IV	300	100	235	515		
V	480	125	380	850		
VI	700	150	600	1520		

Standard Mikrospe with Fine Adjustment hardened points, bevelled for measurlng depth of thread.



Precision Calipers

	Size	Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price	
					vernier $^1/_{10}$ mm or $^1/_{128}$''	vernier $^1/_{50}$ mm or $^1/_{1000}$''
	II	200	60	200	mm or inch graduation on one side only	
	III	250	80	330		
	IV	300	100	535		
riveted points	V	480	125	900		
	VI	700	150	1570		

Calipers	of Stainless Steel with open sliding head front, unremovable set screw	
Standard Off Stainless	beam and jaw slide and jaw	of one piece
Standard Spe Stainless	beam, jaw and point slide, jaw and point	

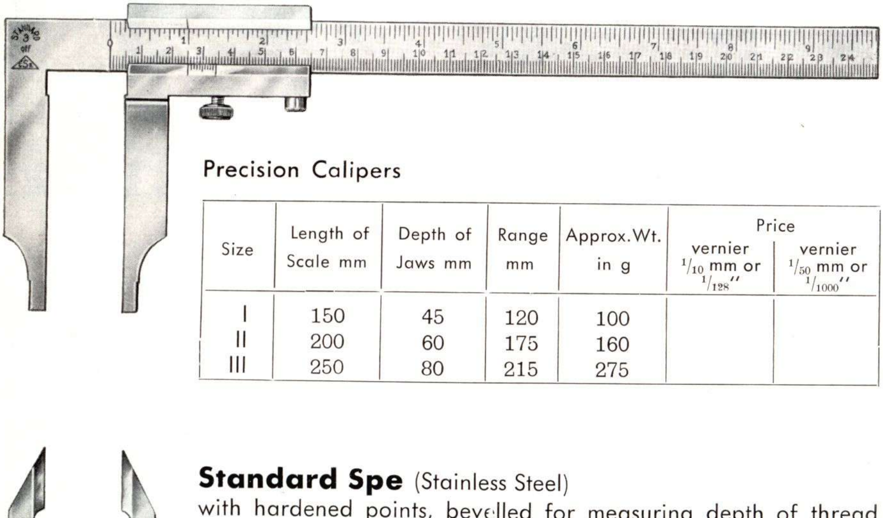
Graduation: Size II, III and IV: front in mm with $^1/_{10}$ or $^1/_{20}$ or $^1/_{50}$ vernier, and $^1/_{16}''$ with $^1/_{128}''$ or $^1/_{1000}''$ vernier.

Back with depth gage in mm.

Unless otherwise specifically requested in order, our standard model, i. e. with $^1/_{10}$ vernier will be delivered.

Nibs: Jaws have nibs of 5, 10 or 20 mm for measuring holes. Ends hardened.

Standard Off (Stainless Steel)

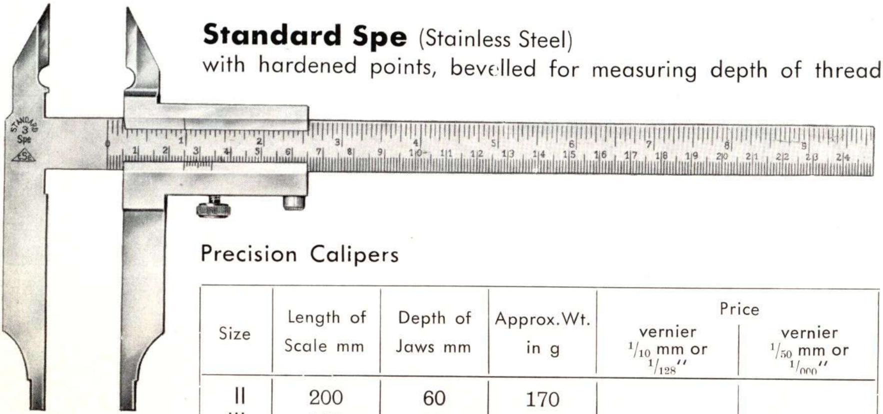


Precision Calipers

Size	Length of Scale mm	Depth of Jaws mm	Range mm	Approx. Wt. in g	Price vernier $^1/_{10}$ mm or $^1/_{128}''$	 vernier $^1/_{50}$ mm or $^1/_{1000}''$
I	150	45	120	100		
II	200	60	175	160		
III	250	80	215	275		

Standard Spe (Stainless Steel)

with hardened points, bevelled for measuring depth of thread



Precision Calipers

Size	Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price vernier $^1/_{10}$ mm or $^1/_{128}''$	 vernier $^1/_{50}$ mm or $^1/_{000}''$
II	200	60	170		
III	250	80	300		

Calipers of Stainless Steel
with open sliding head front, unremovable set screw

Standard Mikro Stainless beam and jaw
slide and jaw } **of one piece**
Standard Mikrospe Stainless beam, jaw and point
slide, jaw and point

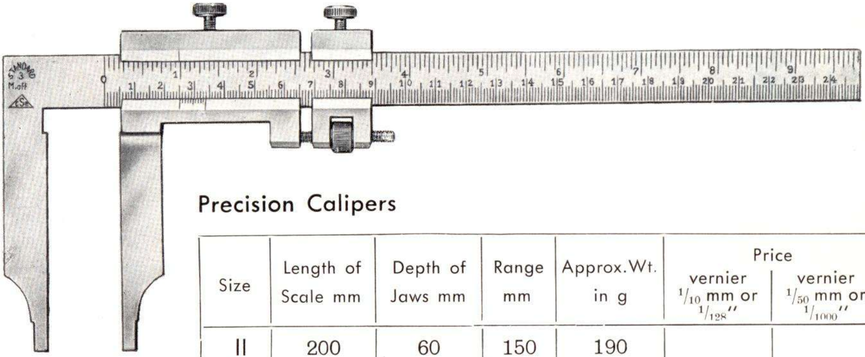
Graduation: Sizes II, III and IV: front in mm with $^1/_{10}$ or $^1/_{20}$ or $^1/_{50}$ vernier, and $^1/_{16}''$ with $^1/_{128}''$ or $^1/_{1000}''$ vernier.

Back with depth gage in mm.

Unless otherwise specifically requested in order, our standard model i. e. with $^1/_{10}$ vernier will bedelivered.

Nibs: Jaws have nibs of 5, 10 or 20 mm for measuring holes. Ends hardened.

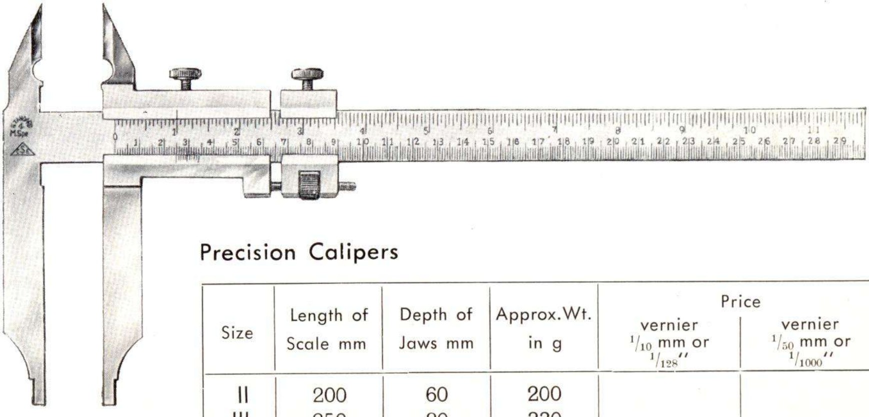
Standard Mikro (Stainless Steel) with Fine Adjustment



Precision Calipers

Size	Length of Scale mm	Depth of Jaws mm	Range mm	Approx. Wt. in g	Price	
					vernier $^1/_{10}$ mm or $^1/_{128}''$	vernier $^1/_{50}$ mm or $^1/_{1000}''$
II	200	60	150	190		
III	250	80	190	310		

Standard Mikrospe (Stainless Steel) with Fine Adjustment, hardened points, beveled for measuring depth of thread



Precision Calipers

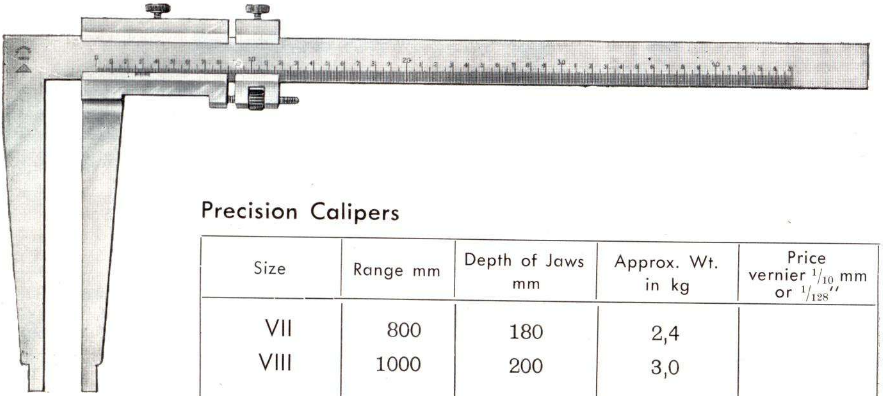
Size	Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price	
				vernier $^1/_{10}$ mm or $^1/_{128}''$	vernier $^1/_{50}$ mm or $^1/_{1000}''$
II	200	60	200		
III	250	80	330		

Calipers of unannealed special steel
with open sliding head front, unremovable set screw beam and jaw of one piece, likewise slide and jaw.

Graduation: Front in mm only with $^1/_{10}$ vernier, or in inches only with $^1/_{128}$''. Back without graduation.

Nibs: Jaws have nibs of 20 mm for measuring holes. Ends are hardened.

Standard Mikro with Precision Vernier (large model)



Precision Calipers

Size	Range mm	Depth of Jaws mm	Approx. Wt. in kg	Price vernier $^1/_{10}$ mm or $^1/_{128}$''
VII	800	180	2,4	
VIII	1000	200	3,0	
IX	1500	200	4,6	
X	2000	200	5,6	

Standard Mikro with extra deep jaws

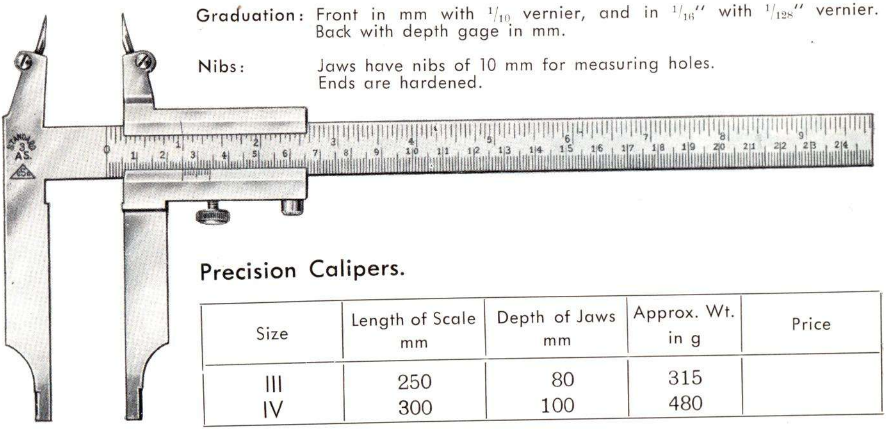
Size	Range mm	Depth of Jaws mm	Approx. Wt. in kg	Price vernier $^1/_{10}$ mm or $^1/_{128}$''
300/150	300	150	0,7	
400/200	400	200	1,4	
500/250	500	250	2,0	
600/300	600	300	2,3	
800/400	800	400	4,0	
1000/500	1000	500	6,5	

The above calipers are not available with $^1/_{50}$ mm, or $^1/_{1000}$'' vernier.

Calipers

of unannealed special steel
with open sliding head front, unremovable set screw
beam, jaw and point holder } of one piece
slide, jaw and point holder }

Standard AS with interchangeable, hardened, cast-steel points



Graduation: Front in mm with 1/10 vernier, and in 1/16" with 1/128" vernier. Back with depth gage in mm.

Nibs: Jaws have nibs of 10 mm for measuring holes. Ends are hardened.

Precision Calipers.

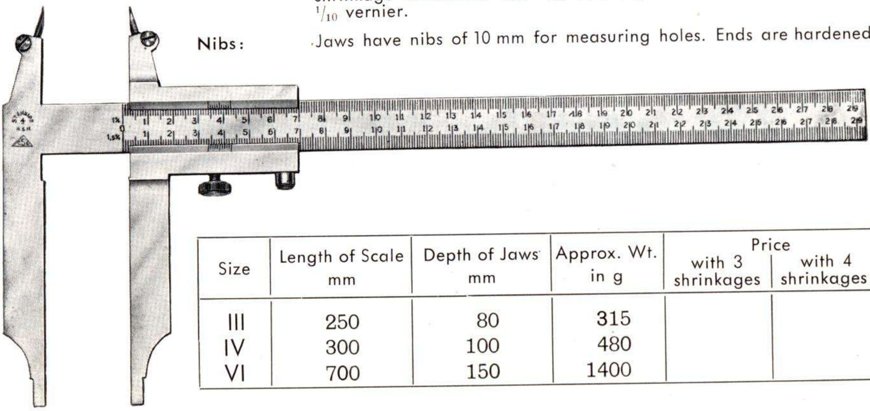
Size	Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price
III	250	80	315	
IV	300	100	480	

Pattern Maker's Calipers Standard ASM

with interchangeable, hardened, cast-steel points

Graduation: Front in mm with 1 % shrinkage allowance and 1/10 vernier, with 1 1/2 % shrinkage allowance and 1/10 vernier; back in mm with 2 % shrinkage allowance and 1/10 vernier; normal scale in mm with 1/10 vernier.

Nibs: Jaws have nibs of 10 mm for measuring holes. Ends are hardened.



Size	Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price with 3 shrinkages	Price with 4 shrinkages
III	250	80	315		
IV	300	100	480		
VI	700	150	1400		

Calipers

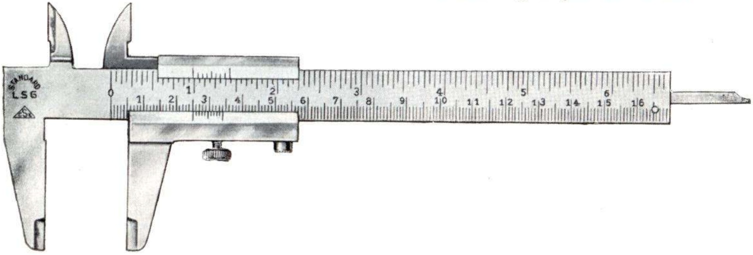
of unannealed special steel
with open sliding head front, unremovable set screw

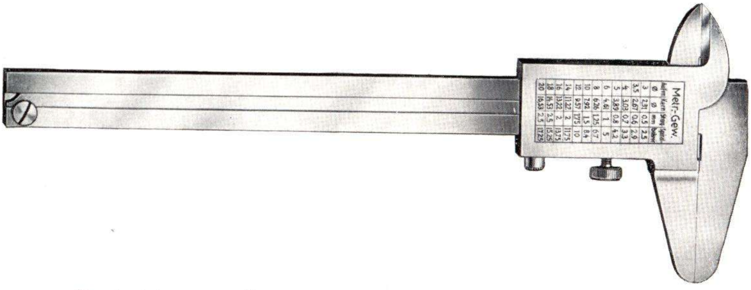
beam, jaw and point } of one piece
slide, jaw and point }

Graduation: Front in mm with $^{1}/_{10}$ or $^{1}/_{20}$ vernier and in $^{1}/_{16}''$ with $^{1}/_{128}$ vernier; or in $^{1}/_{16}''$ with $^{1}/_{128}''$ vernier and in $^{1}/_{40}''$ with $^{1}/_{1000}''$ vernier also available with the vernier combination of $^{1}/_{128}''$ and $^{1}/_{1000}''$. Back with depth gaging rod and table of threads.

Standard LS with hardened points, bevelled for measuring holes and hardened jaw ends

Standard LSG with hardened points, bevelled for measuring holes and hardened jaw ends, bevelled for measuring depth of thread





Pocket-type calipers

	Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price		Price of leather case
				vernier $^{1}/_{10}$ mm and $^{1}/_{128}''$	vernier $^{1}/_{1000}''$ and $^{1}/_{128}''$	
Standart LS	160	49	135			
Standart LSG	160	40	135			

Standard LSG (Stainless Steel) construction as above

Length of Scale mm	Depth of Jaws mm	Approx. Wt. in g	Price		Price of leather case
			vernier $^{1}/_{10}$ mm and $^{1}/_{128}''$	vernier $^{1}/_{1000}''$ and $^{1}/_{128}''$	
160	40	135			

for $^{1}/_{20}$ vernier the price per caliper is increased by:

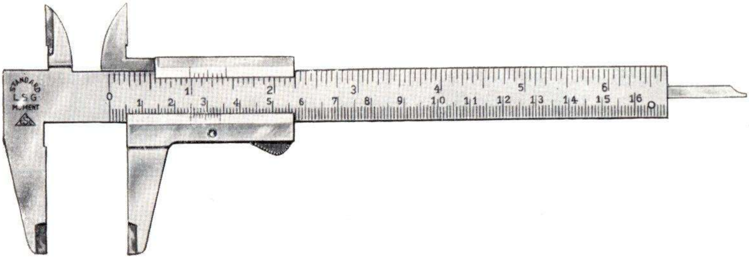
Calipers of unannealed special steel

beam, jaw and point } of one piece
slide, jaw and point }

Graduation: Front in mm with 1/10 or 1/20 vernier and in 1/16" with 1/128" vernier; or in 1/16" with 1/128" vernier and in 1/40" with 1/1000" vernier also available with the vernier combination of 1/128" and 1/1000".
Back with depth gaging rod and table of threads.

Press spring catch and caliper can be adjusted. Release spring and the catch locks automatically. This quick action adjustment, which holds the measurement at the same time, plus first-class craftmanship are outstanding features of this caliper.

Standard LSG Moment with hardened points, bevelled for measuring holes, and hardened jaw ends, bevelled for measuring depth of thread with **quick action clamp.**



Pocket-Type Calipers

Length of scale mm	Depth of jaws mm	Approx. Wt. in g	Price		Price of leather case
			vernier 1/10 mm and 1/128"	vernier 1/1000" and 1/128"	
160	40	135			

Standard LSG Moment (Stainless Steel)

construction as above

Length of scale mm	Depth of jaws mm	Approx. Wt. in g	Price		Price of leather case
			vernier 1/10 mm and 1/128"	vernier 1/1000" and 1/128"	
160	40	135			

Extra Price for 1/20 vernier.

Calipers of unannealed special steel

with hardened measuring surface, open sliding head front beam and jaw of one piece, likewise also the slide.

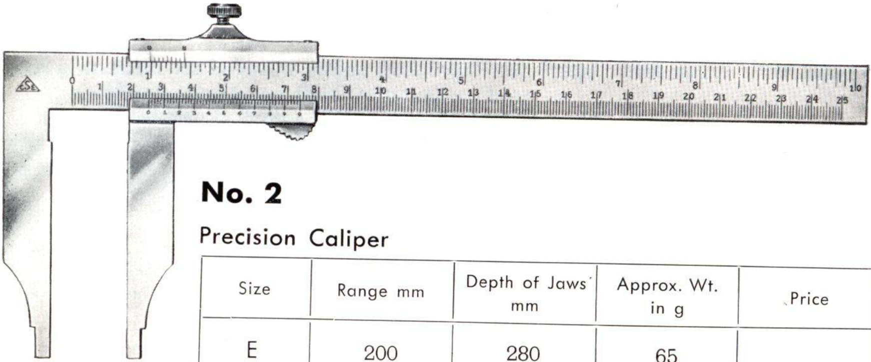
These gages are of maximum accuracy for direct reading and are graduated to read in $^{1}/_{50}$ mm, or $^{1}/_{1000}$ inch.

Graduation: Sizes E and F: front in mm with $^{1}/_{50}$ vernier and in $^{1}/_{16}$'' with $^{1}/_{128}$ vernier, or in $^{1}/_{16}$'' and $^{1}/_{40}$'' with $^{1}/_{128}$ and $^{1}/_{1000}$ vernier.

Back with depth gage.

Size G – M: front with one scale in mm only and $^{1}/_{50}$ vernier, or in $^{1}/_{40}$ inch only and $^{1}/_{1000}$ vernier.

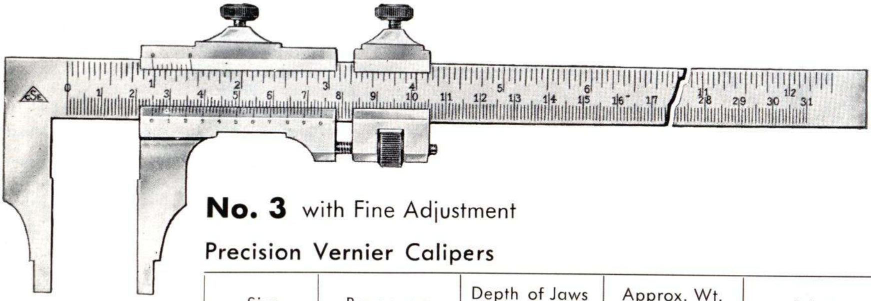
Back without graduation.



No. 2

Precision Caliper

Size	Range mm	Depth of Jaws mm	Approx. Wt. in g	Price
E	200	280	65	



No. 3 with Fine Adjustment

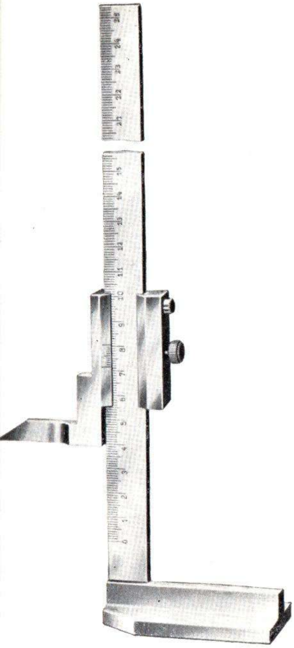
Precision Vernier Calipers

Size	Range mm	Depth of Jaws mm	Approx. Wt. in kg	Price
E	200	50	0,3	
F	250	50	0,4	
FS*	250	50	0,4	
G	300	60	0,5	
GH	400	60	0,7	
H	600	60	1,0	
J	800	80	2,2	
K	1000	80	3,0	
L	1500	80	8,2	
M	2000	80	10.0	

* with hardened points, bevelled for measuring depth of thread.

Height Gage

of unannealed special steel



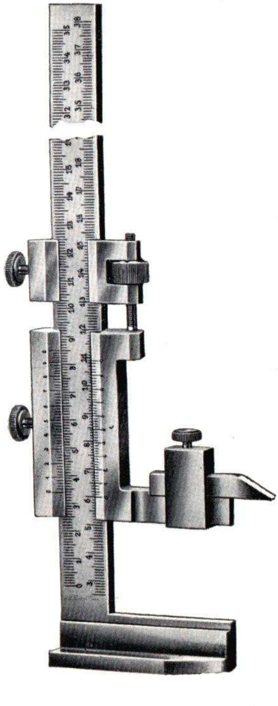
No. 4

This height gage is of simple construction and is indispensable for measuring and layout in tool and machine production.

Graduation: Front in mm with $^{1}/_{10}$ vernier or in $^{1}/_{16}$ inch with $^{1}/_{128}$'' vernier. Back without graduation.

Size	Length of Scale mm	Length of Base mm	Range mm	Approx. Wt. in g	Price
I	250	70x40	230	380	
II	750	150x90	700	4060	
* IV	1050	180x120	1000	9600	

* with vernier $^{1}/_{50}$ mm or $^{1}/_{1000}$''.



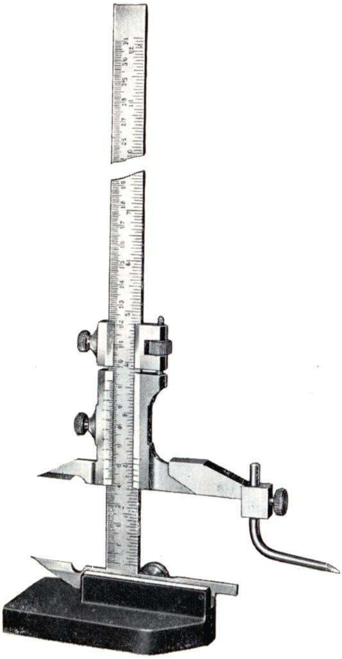
No. 5

Precision Vernier Height Gage

This height gage is of extremely accurate construction and serves for measuring and layout in tool jig and fixture construction. The hardened scriber point can easily be removed and the tool used as caliper.

Graduation: Front in mm with $^{1}/_{50}$ vernier or in $^{1}/_{40}$ inch with $^{1}/_{1000}$'' vernier for lengthwise gaging and in mm with $^{1}/_{50}$ vernier or in $^{1}/_{40}$ inch with $^{1}/_{1000}$ vernier for height gaging; back without graduation.

Size	Length of Scale mm	Base mm	Maximum Scribing Height mm	Approx. Wt. in g	Price
II	350 bzw. 385	85 x 35	280	500	
III	550 bzw. 590	108 x 45	485	1100	



Toolmaker's Surface Gage No. 6

This combined, versatile marking device is especially adapted for manufacturing tools, jigs and fixtures.

It consists of a precision caliper mounted on a holder, and an adjustable scriber. The device can be disassembled and the calipers used separately. Scriber can be reground and replaced.

The scriber is easily adjusted, simply clamp the holder and the scriber at the marks on jaw and beam. Close both jaws completely. Adjust scriber at proper position.

Marking can be done from zero to the extreme limit of the gage.

Before marking, tighten set screw on slide.

Precision Vernier Caliper No. 3 FS

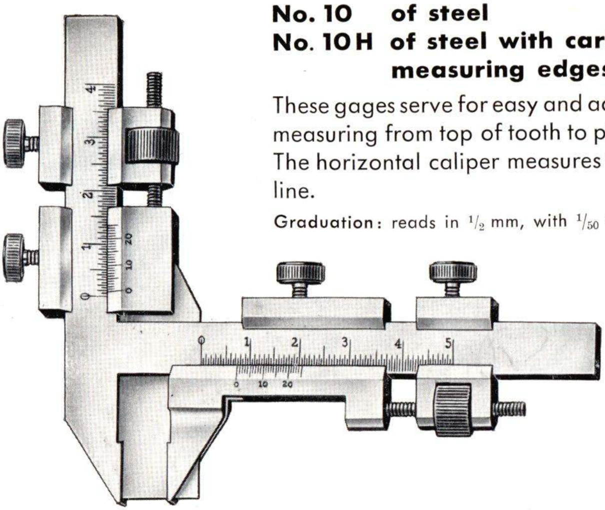
with holder and adjustable scriber attachment

Graduation: front in mm with $^1/_{50}$ vernier and in $^1/_{16}''$ with $^1/_{128}''$ vernier, or in $^1/_{16}''$ and $^1/_{40}''$ with $^1/_{128}''$ and $^1/_{1000}''$ vernier.

Back with depth gage.

Size	Range mm	Depth of Jaws mm	Approx. Wt. in g	Price
F/S	250	50	920	

Gear Tooth Vernier Calipers No. 10



No. 10 **of steel**
No. 10 H **of steel with carbide-tipped measuring edges**

These gages serve for easy and accurate testing of gear teeth, measuring from top of tooth to pitch line by vertical caliper. The horizontal caliper measures thickness of a tooth at pitch line.

Graduation: reads in $^1/_2$ mm, with $^1/_{50}$ vernier.

Size	Module	Gear Tooth Vernier Calipers			Wooden Cases	
		Approx. Wt. in g	Price No. 10	Price No. 10 H	Approx. Wt. in g	Price
I	1—15	100			200	
II	2—25	240			250	
III	5—40	460			300	

TABLE FOR SETTING GEAR TOOTH VERNIER CALIPERS

to Test Gear Teeth

No. of Teeth	Top of Tooth	Thickness of Tooth	No. of Teeth	Top of Tooth	Thickness of Tooth	No. of Teeth	Top of Tooth	Thickness of Tooth
10	1,0615	1,5643	26	1,0237	1,5697	50	1,0123	1,5707
11	1,0560	1,5654	27	1,0228	1,5698	55	1,0112	1,5707
12	1,0514	1,5663	28	1,0221	1,5699	60	1,0103	1,5708
13	1,0474	1,5669	29	1,0212	1,5700	70	1,0088	1,5708
14	1,0441	1,5674	30	1,0206	1,5700	80	1,0077	1,5708
15	1,0411	1,5679	32	1,0192	1,5701	90	1,0068	1,5708
16	1,0386	1,5682	34	1,0182	1,5702	100	1,0062	1,5708
17	1,0363	1,5685	35	1,0176	1,5702	200	1,0031	1,5708
18	1,0343	1,5688	36	1,0171	1,5703	rack	1,0000	1,5708
19	1,0325	1,5690	38	1,0162	1,5703			
20	1,0308	1,5692	40	1,0154	1,5704			
21	1,0293	1,5693	42	1,0146	1,5704			
22	1,0281	1,5694	44	1,0141	1,5704			
23	1,0268	1,5695	45	1,0137	1,5704			
24	1,0257	1,5696	46	1,0134	1,5705			
25	1,0246	1,5697	48	1,0128	1,5706			

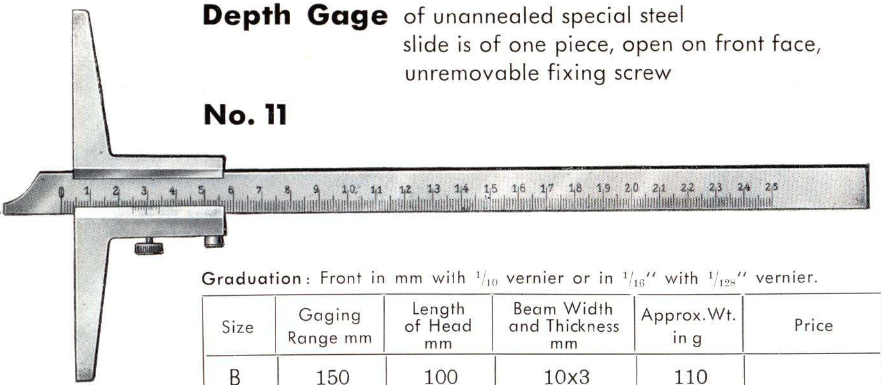
Example:

No. of teeth 30 – module 20
heigth of tooth 1,0206 x 20 = 20,41
thickness of tooth 1,570 x 20 = 31,40

Depth Gage of unannealed special steel

slide is of one piece, open on front face, unremovable fixing screw

No. 11



Graduation: Front in mm with $^1/_{10}$ vernier or in $^1/_{16}$'' with $^1/_{128}$'' vernier.

Size	Gaging Range mm	Length of Head mm	Beam Width and Thickness mm	Approx. Wt. in g	Price
B	150	100	10x3	110	
C	200	100	10x3	135	
E	250	130	15x3,5	210	
F	300	160	17x4	320	
F 4	400	160	17x4	350	
F 5	500	160	17x4	400	
G	500	250	17x4	600	
H	800	300	25x5	2000	
J	1000	400	30x6	3300	

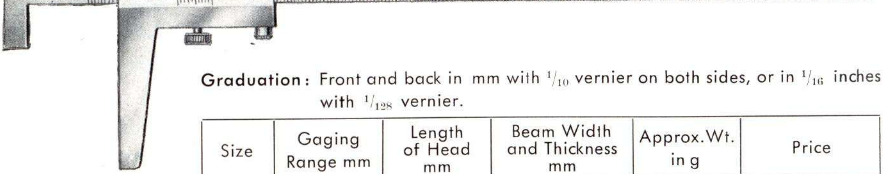
No. 11 M for Pattern Makers

Graduation: Front in mm with 1% shrinkage allowance and $^1/_{10}$ vernier and with $1^1/_2$% shrinkage allowance and $^1/_{10}$ vernier, back in mm with 2% shrinkage allowance and $^1/_{10}$ vernier and normal scale in mm with $^1/_{10}$ vernier.

Size	Gaging Range mm	Length of Head mm	Beam Width and Thickness mm	Approx. Wt. in g	Price
F	300	160	17x4	320	

No. 12

Combination Depth Gage and Hook Rule for measuring T-slots and hard-to-get-at parts. Reverse the hook and the instrument can be used as depth gage.

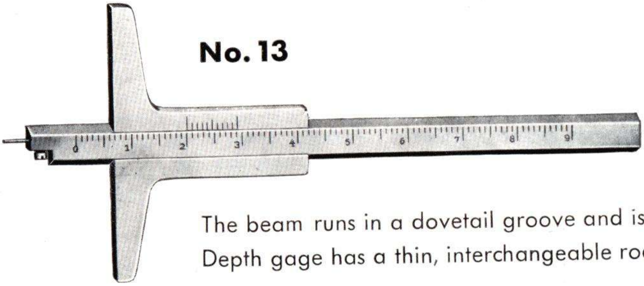


Graduation: Front and back in mm with $^1/_{10}$ vernier on both sides, or in $^1/_{16}$ inches with $^1/_{128}$ vernier.

Size	Gaging Range mm	Length of Head mm	Beam Width and Thickness mm	Approx. Wt. in g	Price
C	200	100	10x3	130	
F	300	160	17x4	350	
F 5	500	160	17x4	450	

Depth Gage of unannealed special steel

Caliper is of one piece with open front face.



No. 13

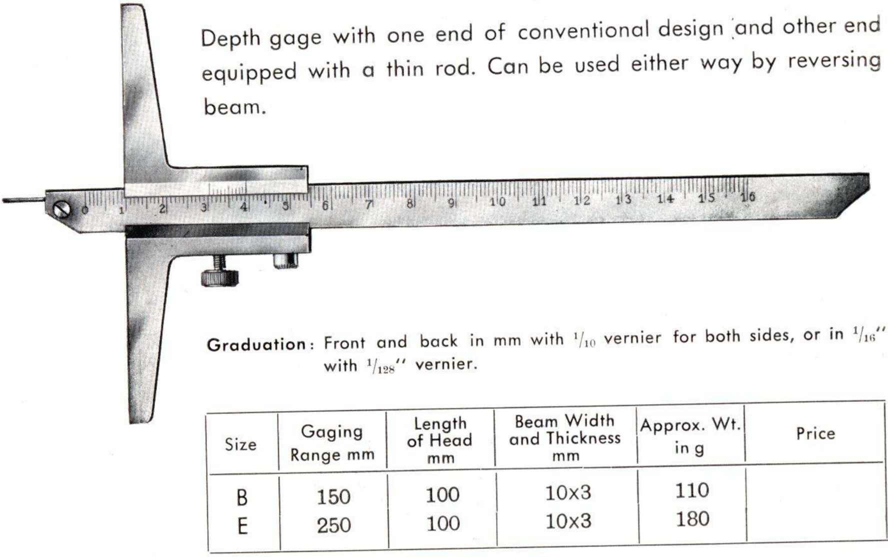
The beam runs in a dovetail groove and is under spring pressure. Depth gage has a thin, interchangeable rod at its end.

Graduation: Front in mm with $^1/_{10}$ vernier or in $^1/_{16}$'' with $^1/_{128}$'' vernier

Gaging Range mm	Length of Head mm	Beam Width and Thickness mm	Approx. Wt. in g	Price
80	50	7x2,5	30	

No. 14 with unremovable set screw

Depth gage with one end of conventional design and other end equipped with a thin rod. Can be used either way by reversing beam.



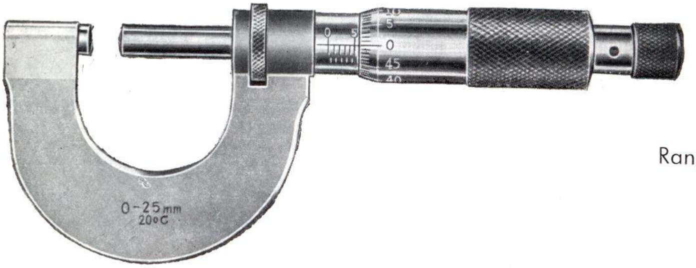
Graduation: Front and back in mm with $^1/_{10}$ vernier for both sides, or in $^1/_{16}$'' with $^1/_{128}$'' vernier.

Size	Gaging Range mm	Length of Head mm	Beam Width and Thickness mm	Approx. Wt. in g	Price
B	150	100	10x3	110	
E	250	100	10x3	180	

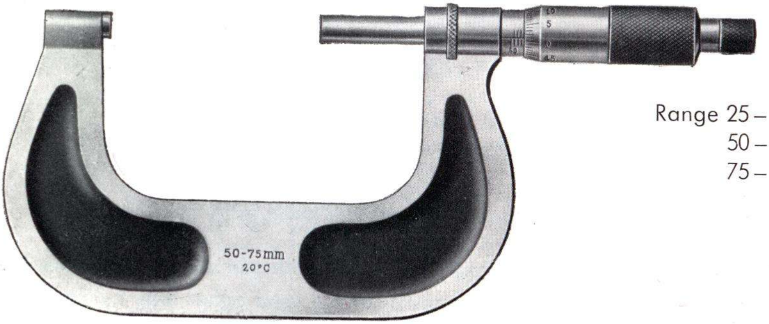
Micrometers Precision Type, German Engineering Standard Precision Grade I DIN 863 graduated to read in $^1/_{100}$ mm or $^1/_{1000}$″
with lock nut, ratchet, thimble-covered $^1/_2$ mm thread and adjusting nut to compensate for wear.

When the hardened measuring surfaces show signs of wear, loosen ratchet and turn sleeve into correct alignment with the zero. In doing so, care should be taken to observe the following: Clean both gaging surfaces thoroughly, close micrometer completely and tighten the clamping nut. Wrap a piece of cardboard around the spindle and clamp same between the jaws of a vise with ratchet on top. Loosen ratchet and set sleeve accurately to zero, then tighten ratchet once more and release lock nut.

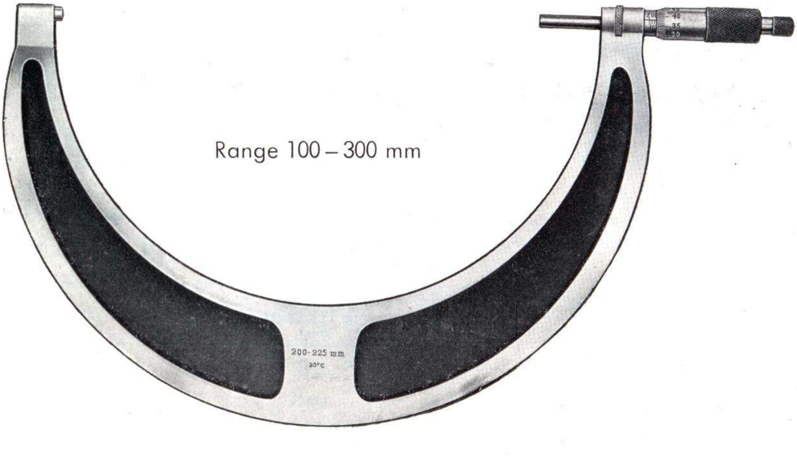
No. 20 Kr.



Range 0– 25 mm



Range 25– 50 mm
50– 75 mm
75–100 mm



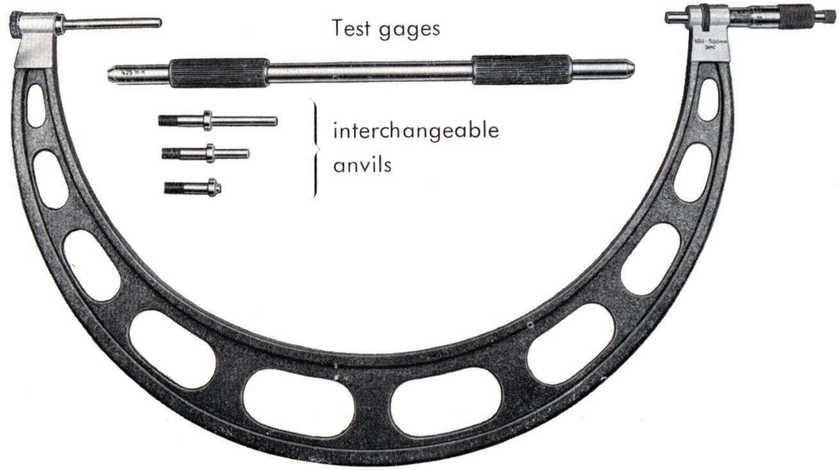
Range 100–300 mm

Micrometers No. 20 KR

Range		Micrometer			Wooden Case	
mm	inch	Approx. Wt. in g	Price	Chromium net	Approx. Wt. in g	Price
0— 25	0- 1	150			85	
25— 50	1- 2	200			120	
50— 75	2- 3	300			140	
75—100	3- 4	375			230	
100—125	4- 5	425			250	
125—150	5- 6	550			300	
150—175	6- 7	650			380	
175—200	7- 8	750			400	
200—225	8- 9	800			450	
225—200	9-10	920			550	
250—275	10-11	1070			580	
275—300	11-12	1350			650	

For test gages see page 23.

Micrometers No. 20 G for large diameters



The frame is of malleable iron and despite its great rigidity is constructed in such a manner that it is easy to handle.

Range of the spindle is 25 mm. Four interchangeable anvils of 25, 50 75 and 100 mm enable a reading of from 25 to 100 mm.

Range		Micrometer		Test Gages					
mm	inch	Approx. Wt. in kg	Price	mm	inch	Price	mm	inch	Price
300— 400	12—16	2,2		325	13		375	15	
400— 500	16—20	3,0		425	17		275	19	
500— 600	20—24	4,0		525	21		575	23	
600— 700	24—28	4,3		625	25		675	27	
700— 800	28—32	6,0		725	29		775	31	
800— 900	32—36	7,5		825	33		875	35	
900—1000	36—40	9,5		925	37		975	38	

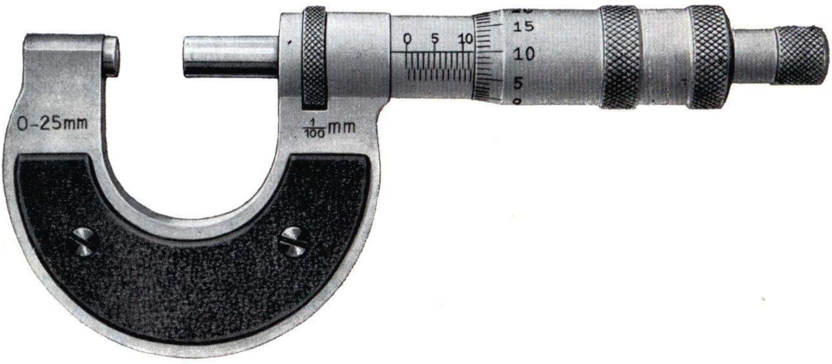
Chromium-Plated Micrometers No. 20 St

Chromium-Plated Micrometers No. 20 St/H

with carbide-tipped measuring surface

Precision Type, German Engineering Standard Precision, Grade I, DIN 863, graduated to read in $^{1}/_{100}$ mm or $^{1}/_{1000}$″

heavy-duty model with lock nut, ratchet, covered $^{1}/_{2}$ mm thread and adjusting nut to compensate for wear.



These micrometers are built with an especially strong, insulated frame and combine maximum accuracy with greatest ruggedness. The diameter of the thimble is ample enough to assure that the dividing lines are about 1 mm apart so that fractions of $^{1}/_{100}$th mm can be readily judged.

20 St/H with carbide-tipped measuring surface increase the resistance again attrition multifarious.

When the hardened measuring surfaces show signs of wear, this can be remedied by loosening the ratchet spacer and aligning thimble to the zero mark by means of a pin. This is done as follows: Clean both gaging surfaces thoroughly, close micrometer completely and tighten lock nut. Place a piece of cardboard around spindle and clamp spindle in a vise, with ratchet on top. Loosen ratchet spacer with a pin and set thimble to zero. Tighten ratchet spacer and release lock nut.

Prices

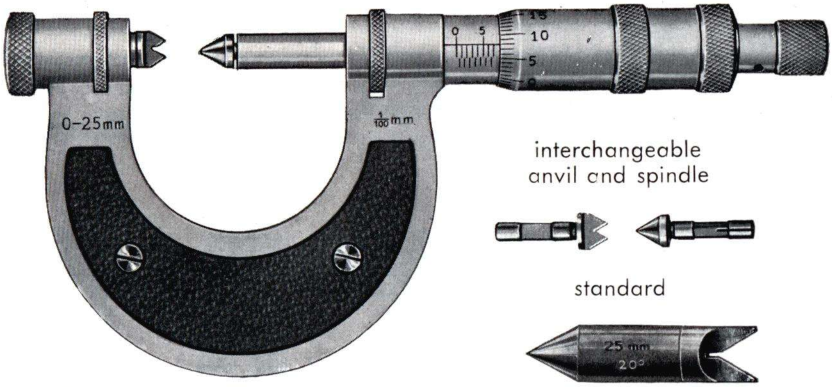
Micrometers				Test Gages				Wooden Case	
Range		Approx. Wt. in g	Price	mm	inch	Approx. Wt. in g	Price	Approx. Wt. in g	Price
mm	inch								
0— 25	0—1	240		—	—	—		85	
25— 50	1—2	250		25	1	25		120	
50— 75	2—3	380		50	2	15		140	
75—100	3—4	400		75	3	35		230	

Chromium-Plated Screw Thread Micrometers No. 20 Gew.

with interchangeable spindle point and anvil

Precision Type, German Engineering Standard Precision, Grade I, DIN 863, graduated to read in $^{1}/_{100}$ mm or $^{1}/_{1000}''$.

Heavy-duty micrometer with lock nut, ratchet, covered $^{1}/_{2}$ mm thread and adjusting nut to compensate for wear.



These micrometers are built with an especially strong, insulated frame and combine highest accuracy with greatest ruggedness.

Due to the various dimensions of the V-shaped anvil and spindle, because of the different thread angles and pitch or number of threads, the thread micrometer caliper must be newly set to zero after every replacement of the interchangeable anvil and spindle.

In order to set to zero, close micrometer calipers 0–25 mm, until the spindle and anvil contact. Then adjust the V-shaped measuring attachments by means of the fine adjusting screw on the anvil until spindle stands at zero. Set by means of the lock nut on the fine adjusting screw. Larger sized screw thread micrometer calipers are adjusted by means of standards insizes 25, 50, 75, 100 or 125 mm.

Measuring attachments are interchangeable, precision-ground and hardened and are available for the various types of thread and pitches.

Price

Screw Thread Micrometers incl. Wooden Cases				Test Gages			
Range mm	Range inch	Approx. Wt. in g	Price without available Standards	mm	inch	Approx. Wt. in g	Price
0— 25	0—1	320		—	—	—	
25— 50	1—2	280		25	1	10	
50— 75	2—3	350		50	2	20	
75—100	3—4	400		75	3	30	
100—125	4—5	500		100	4	40	
125—150	5—6	620		125	5	50	

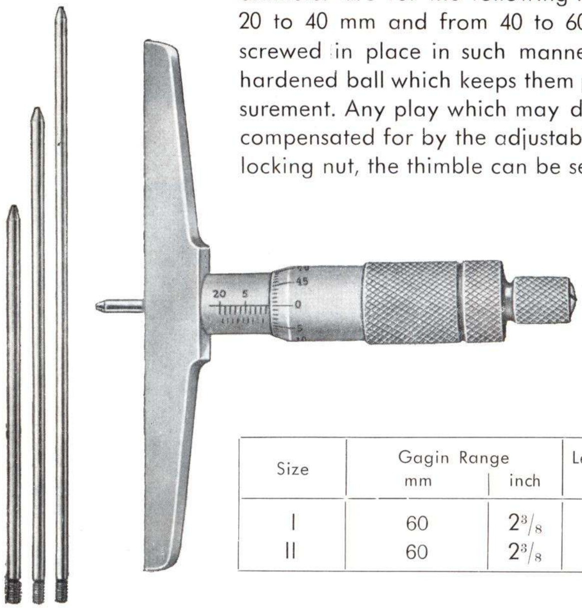
Interchangeable anvils and spindles for pitch (or flank) diameter:

No. 20 Gew. M	thread for 60° metric thread lead in mm, 0.4 – 0.6, 0.6 – 1, 1 – 1.75, 1.75 – 3, 3 – 5, 5 – 7.5 Price per pair for anvil and spindle . . . .
No. 20 Gew. W	thread for 55° Whitwort thread turns per inch 60-48, 48-40, 40-32, 32-24, 24-18, 18-14, 14-10, 10-7, 7-4.5, 4.5-3 Price per pair for anvil and spindle . .
No. 20 Gew. K	thread for minor diameter, price for anvil . . . .
No. 20 Gew. K	thread for minor diameter, price for spindle . . . . . .

Chromium-Plated Micrometer Depth Gages No. 19

graduated to read in $^1/_{100}$ mm or $^1/_{1000}$″

with 3 interchangeable measurings rods, thimble-covered $^1/_2$ mm thread and adjustable adjusting nut. Rods are hardened at both ends. The three interchangeable measuring rods of 2.5 mm diameter are for the following measurements: 0 to 20 mm, from 20 to 40 mm and from 40 to 60 mm. When used the rods are screwed in place in such manner that they resiliently contact a hardened ball which keeps them permanently true to correct measurement. Any play which may develop through wear etc. can be compensated for by the adjustable nut. By unscrewing the knurled locking nut, the thimble can be set at zero.

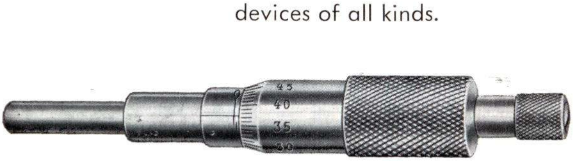


Size	Gagin Range		Length of Head	Approx. Wt.	Price
	mm	inch	mm	in g	with case
I	60	$2^3/_8$	55	120	
II	60	$2^3/_8$	100	160	

Micrometer Heads No. 20 o B

Precision Type graduated to read in $^1/_{100}$ mm or $^1/_{1000}$″ with ratchet, covered $^1/_2$ mm thread and adjusting nut to compensate for wear.

Micrometer heads are adapted for attachment to special gaging devices of all kinds.

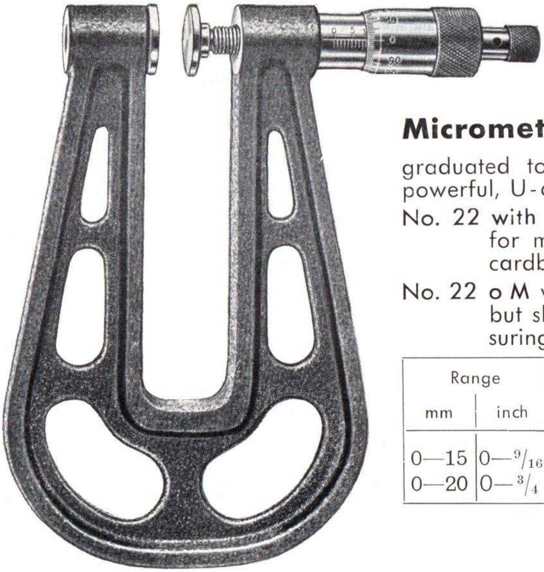


Range		Thimble		Approx. Wt.	Price
mm	inch	Length mm	Diameter mm	in g	
0—25	0—1	16	10	80	

Test Gages No. 21 for Micrometers of hardened steel, ground to extreme accuracy

Test gages for 25 mm or 1'' micrometers are round, those over 50 mm or 2'' are cylindrical, with smooth measuring surfaces. To guard against any change in accuracy while held in the hands, test gages from 50 – 275 mm or 2 – 11'' have one insulated handle and test gages over 300 mm two insulated hand handles.

mm	inch	Approx. Wt. g	Price	mm	inch	Approx. Wt. g	Price
25	1	25		175	7	125	
50	2	30		200	8	140	
75	3	35		225	9	150	
100	4	60		250	10	170	
125	5	65		275	11	200	
150	6	100		300 to 1000	12 to 40	on request	



Micrometer No. 22

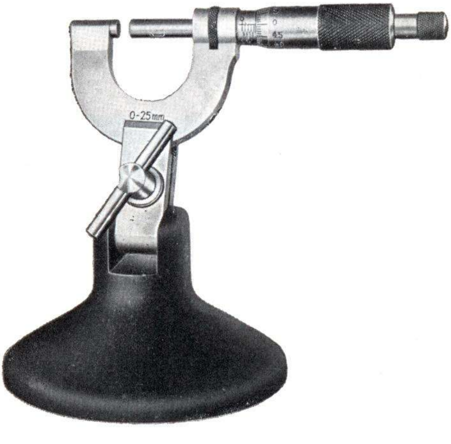
graduated to read in $^1/_{100}$ mm or $^1/_{1000}$'' with a powerful, U-cut frame, ratchet and 1 mm thread.

No. 22 with disc-shaped anvil and spindle ends for measuring felt, leather, sheet rubber, cardboard etc.

No. 22 o M without disc-shaped anvil and spindle, but shaped like No. 20, page 18, for measuring sheet metal etc.

Range		Depth of Frame mm	Diameter of Gaging Discs mm	Approx. Wt. in g	Price	
mm	inch				**No. 22**	**No. 22 o.M.**
0—15	0—$^9/_{16}$	100	20	270		
0—20	0—$^3/_4$	200	20	800		

Micrometer Stand No. 23



With this device, it is possible to have one hand free to hold the work and the other hand free to adjust the micrometer.

Wt. 650 g

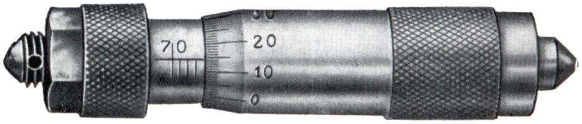
Price without micrometer

Cylindrical Inside Micrometers

All contact surfaces hardened. Compensation for wear on points easily made by opening lock nut and adjusting to zero line.

Up to 100 mm with $^{1}/_{2}$ mm thread, over 100 mm with 1 mm thread.

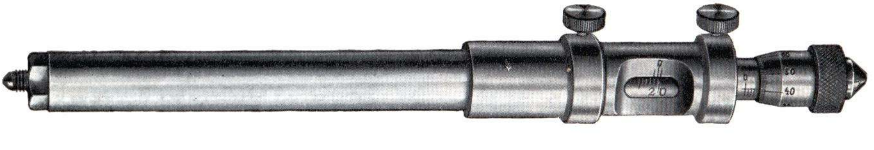
No. 25 with micrometer screw,
graduated to read in $^{1}/_{100}$ mm or $^{1}/_{1000}$''



Range		Approx. Wt. in g	Price	Chromium net	Range		Approx. Wt. in g	Price	Chromium net
mm	inch				mm	inch			
35— 50	$1^{3}/_{8}$—2	15			250—300	10—12	200		
50— 70	2—$2^{3}/_{4}$	30			300—350	12—14	240		
70—100	$2^{3}/_{4}$—4	50			350—400	14—16	270		
100—150	4— 6	100			400—450	16—18	350		
150—200	6— 8	160			450—500	18—20	400		
200—250	8—10	190							

No. 26

for slide and micrometer screw operation, graduated to read in $^{1}/_{100}$ mm or $_{1}/_{1000}$''



Range		Approx. Wt. in kg	Price	Range		Approx. Wt. in kg	Price
mm	inch			mm	inch		
400— 600	16—24	0,7		1700—2500	48—100	4,0	
600—1000	24—40	1,2		2500 - 4000	100—160	7,9	
1000—1700	40—48	2,5					

Dial Indicators

Dial indicators are indispensable in every well equipped modern shop. In the construction of many products, especially when making comporative measurements, they are more handy and accurate than micrometer gages.

Since dial indicators eliminate the human element, the measuring result is always the same. Minor measuring deviations of $^1/_{1000}$ mm and more can be quickly and accurately determined by unskilled workers without difficulty, since the spacings of the graduations are far apart.

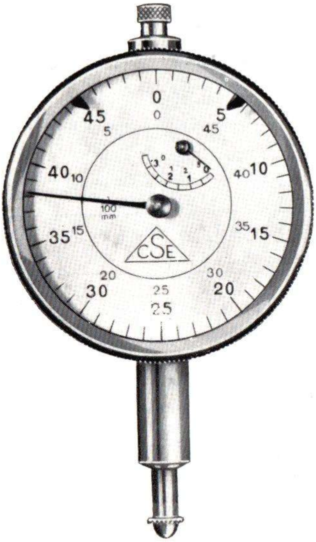
The Dial Indicators have ruggedly constructed, high quality movements encased in completely dust proof housings.

The contact point, which is accurately ground and must always be absolutely clean, has an internal thread in the contact end, into which attachments can be screwed. Stroke of contact stem is limited by a resilient stop to protect the movement against sudden jolts. Due to this resilient stop, the pointer does not always return to the ultimate position, but this will not affect the measuring.

The first $^{20-30}/_{100}$ mm should not be used for measuring so that right form the outset the contact point will be under the correct tension. The hands on our dial indicators are set to $^1/_4$ revolution before zero.

By means of the knurled rim, the dial can be turned to set the indicator at "0" in any position.

During transportation, care must be taken to protect contact stem against shock.



Small Dial Indicator No. 31 K

Graduated to read in $^1/_{100}$ mm with two adjustable limit marks.

The large hand shows $^1/_{100}$ mm and one complete revolution equals $^1/_2$ mm. The small hand indicated the number of complete mm.

Range mm	mm ∅	Approx. Wt. in g	Price
3,5	44	230	

additional price if equipped with a hinge having a 5 mm hole.

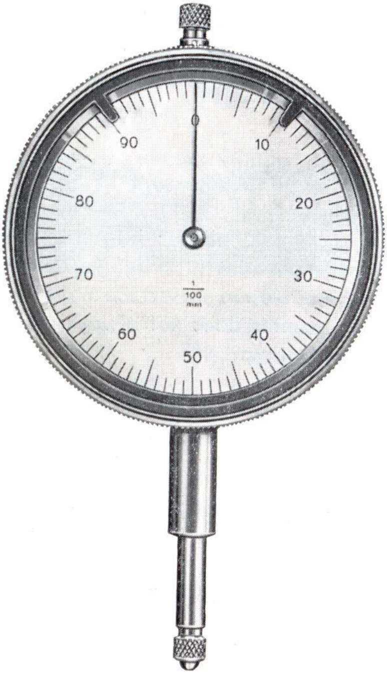
Dial Indicators No. 30 T

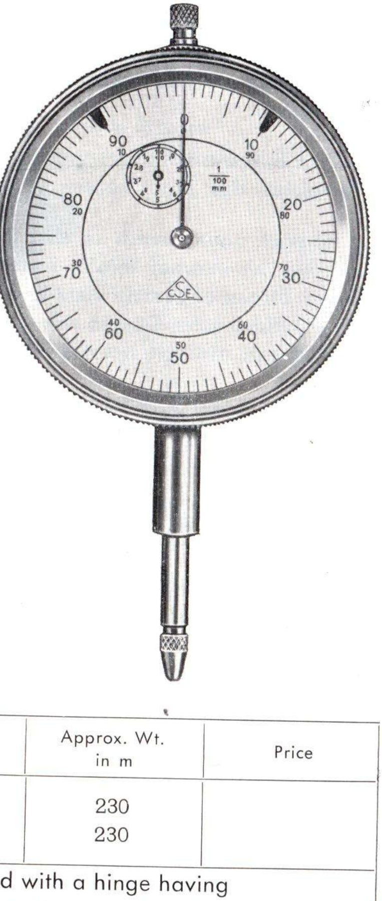
Graduated to read in hundredths of a mm. With two adjustable limit marks.

Dial Indicators No. 31 T

Graduated to read in hundredths of a mm.

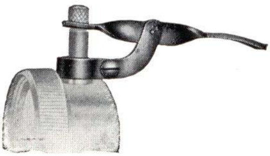
The large hand shows $^1/_{100}$ mm and one complete revolution equals 1 mm. The small hand indicated the number of complete mm.





Number	Range mm	Approx. Wt. in m	Price
30 T 31 T	5 10	230 230	
additional price if equipped with a hinge having a 5 mm hole			

Lever Control No. 30 A for Dial Indicators



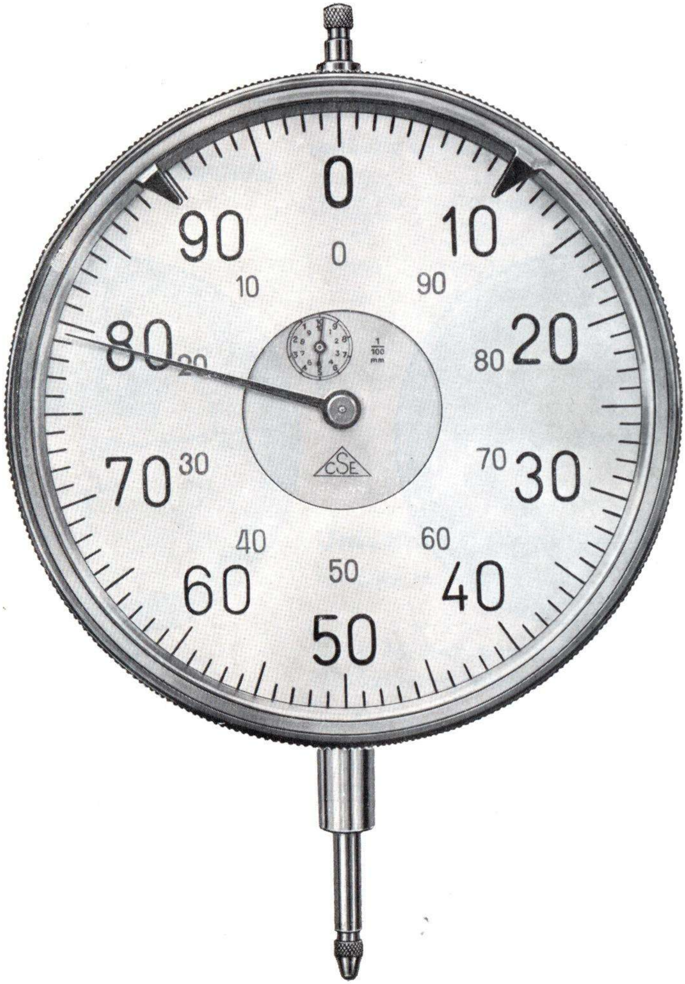
This device can be clamped to the dial indicator, the forked lever end of which fits into the groove of the button which acts upon the contact point. By means of this lever, the contact piece can be lifted easily and quickly, which is of special importance when inspecting large numbers of pieces.

Weight approx. 30 g	Price

Large Dial Indicator No. 31 G

Graduated to read in $^1/_{100}$ mm. With two adjustable limit marks.

The large hand shows $^1/_{100}$ mm and one complete revolution equals 1 mm. The small hand indicates the number of complete mm.

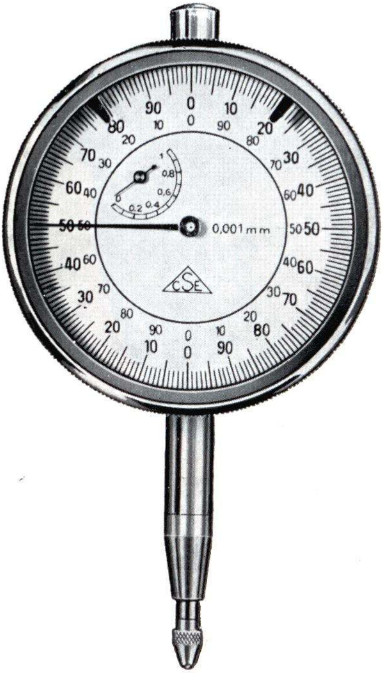


Range mm	∅ mm	Approx. Wt. in g	Price
10	110	800	

Dial Indicators No. 32 T

Graduated to read in $^{1}/_{1000}$ mm.
With two adjustable limit marks.

The large hand shows $^{1}/_{1000}$ and $^{1}/_{100}$ mm and one complete revolution equals 0,2 mm. The small hand indicated $^{1}/_{10}$ and 1 mm.



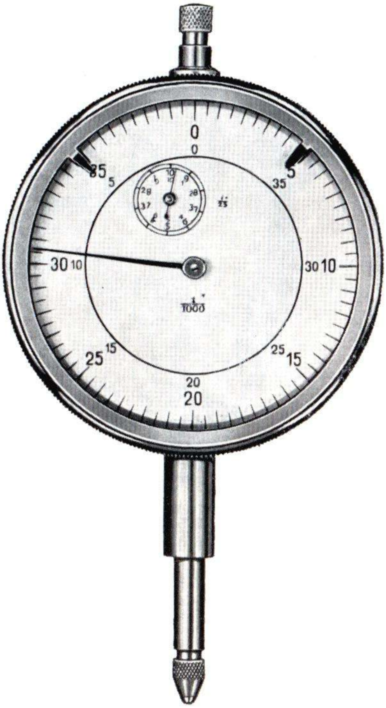
Approx Wt. 230 g

Price

Dial Indicators No. 32 Z

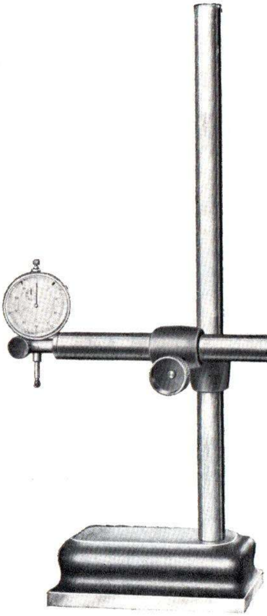
Graduated to read in $^{1}/_{1000}''$.
With two adjustable limit marks.

The large hand shows $^{1}/_{1000}''$ and one complete revolution equals $^{1}/_{25}''$. The small hand indicated $^{1}/_{25}''$ and one complete revolution equals 1''.



Approx Wt. 230 g

Price



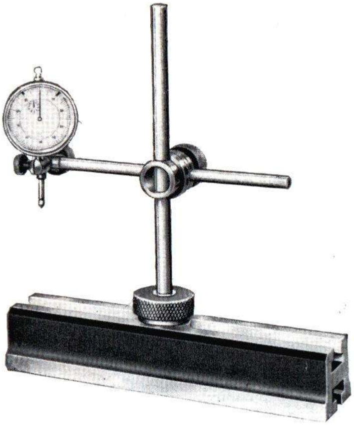
Large Swivel Post Stands No. 33

for Dial Indicators

This stand is used to test whether turned parts are running true and whether surfaces are parallel. The top and bottom surfaces of the base are ground so that the stand can also be used as a measuring table.

The arm supporting the dial indicator is both vertically and horizontally adjustable.

Measuring Height mm	Size of Base mm	Approx. Wt. in kg	Price without dial indicator
500	185 x 80	5,25	
750	220 x 110	10,3	



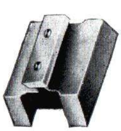
Universal Stand No. 34

for Dial Indicators

Serves for testing and aligning working pieces and for testing whether V-ways are parallel etc.

Vertical bar can be fastened as desired to the T-slots of the cast iron base. The surfaces of the base are accurately ground. A universal clamp makes it possible to use this device in any position. Attachments No. 34 A and B serve for parallel guiding of the base along edges, grooves, and guideways.

No. 34 A



No. 34 B

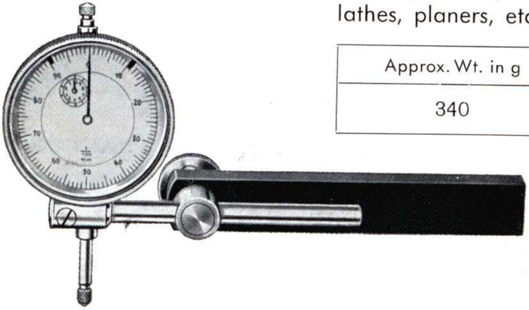
No.	Measuring Height mm	Length of Base mm	Approx. Wt. in g	Price without dial indicator
34	280	250	4100	
34 A		60	400	
34 B		60	80	

The above stands are recommended for my dial indicators No. 30 T – 32 Z.

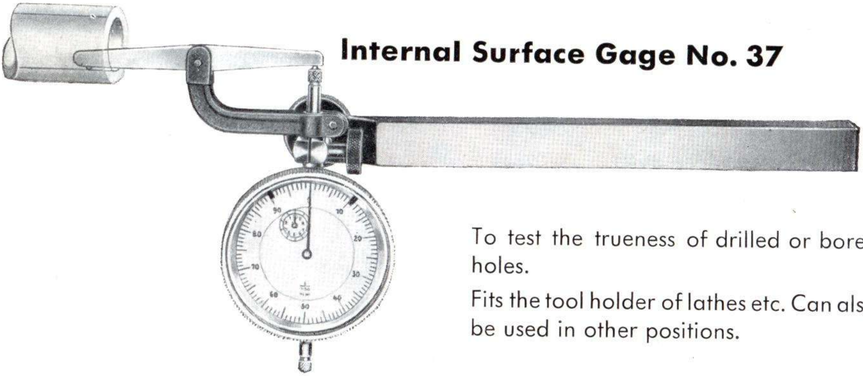
Shank No. 35 for Dial Indicator

Serves primarily for testing and aligning work on lathes, planers, etc.

Approx. Wt. in g	Price without dial indicator
340	



Internal Surface Gage No. 37

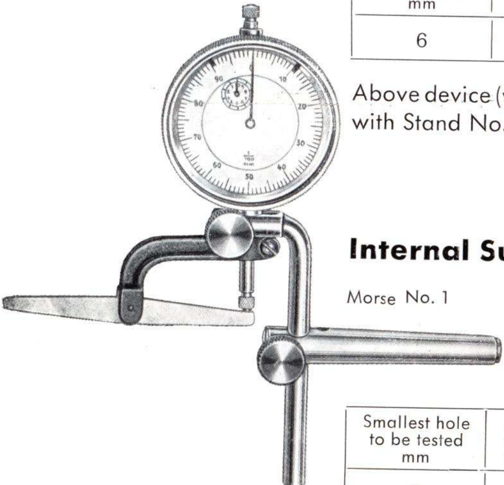


To test the trueness of drilled or bored holes.

Fits the tool holder of lathes etc. Can also be used in other positions.

Smallest hole to be tested mm	Maximum measuring depth mm	Weight without dial indicator approx. in g	Price without dial indicator
6	35	450	

Above device (without holder) also used in connection with Stand No. 34.



Internal Surface Gage No. 37 A

Morse No. 1

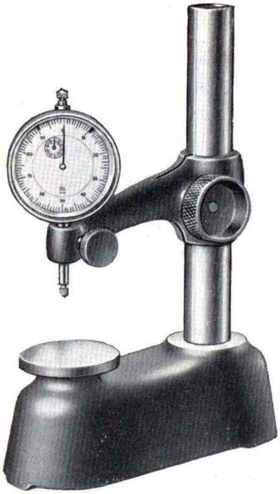
To set up bored holes and test whether they run true. Fits working spindle of bore mills, milling machines, etc.

Smallest hole to be tested mm	Maximum measuring depth mm	Weigth without dial indicator approx. in g	Price without dial indicator
6	35	180	

The above articles are recommended for use with my Dial Indicators No. 30 T – 32 Z

Dial Indicator Tables

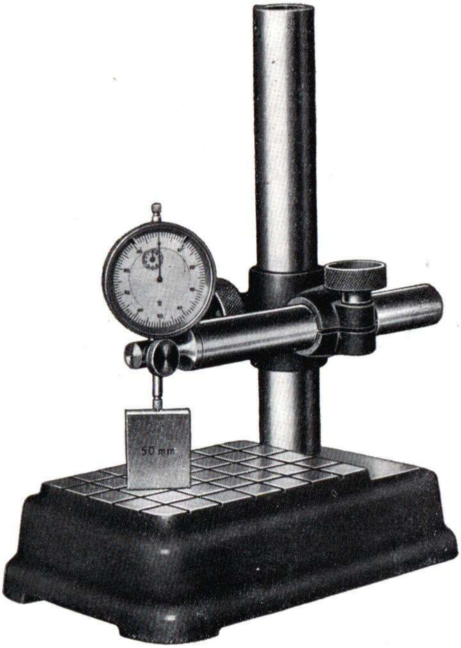
Dial is quickly and easily adjusted as desired on vertical arm.



Small Dial Indicator Table
No. 36 K

The table mounted on base is hardened, precision ground and polished.

Measuring height mm	Diameter of table mm	Distance from center of table to column mm	Weight without dial indicator approx. kg	Price without dial indicator
150	60	80	2,8	



Large Dial Indicator Table
No. 36 G

for comparative measurement of round and flat parts

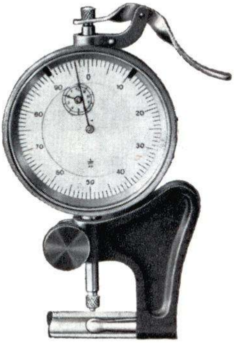
The table is machined to greatest precision, hardened and ground.

Measuring height mm	Table surface mm	Weight without dial indicator approx. kg	Price without dial indicator
200	150 x 105	7	

The above Dial Indicator Tables are recommended for my Dial Indicators No. 30 – 31 and for Lever Control No. 30 A for Dial Indicator.

Pipe Thickness Dial Indicator with Lever Control

No. 38

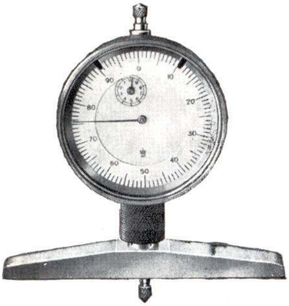


graduated to read in 1/100 mm

Instrument has a hardened anvil 6 mm in diameter. Pipes of and above 6 mm i. d. can be measured. Range 10 mm.

Weight without dial indicator approx. g	Price without dial indicator and lever control	Price for lever control
90		

Special types available down to 3 mm i. d.

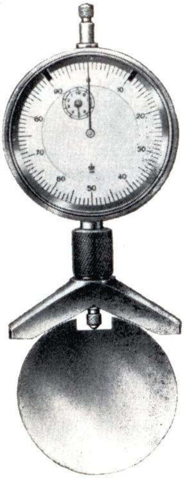


Dial Depth Gage for Grooves, etc.

No. 39

graduated to read in 1/100 mm

Length of base mm	Range mm	Weight without dial indicator approx. g	Price without dial indicator
100	0 — 10	100	



Dial Keyway Gage

No. 40

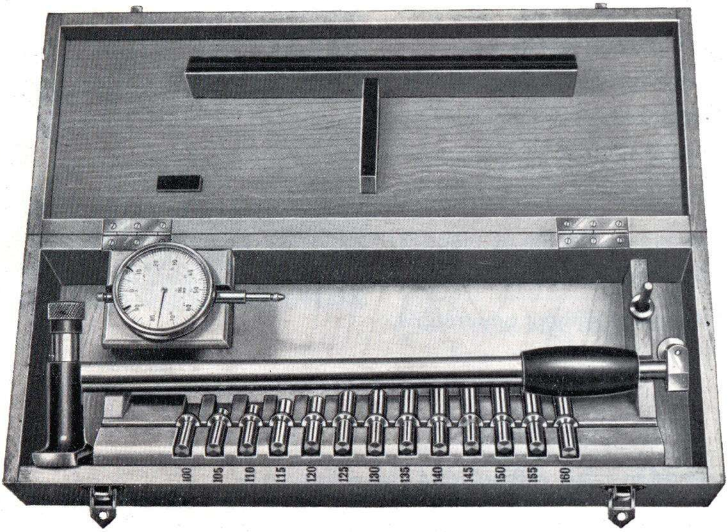
graduated to read in 1/100 mm

Serves to measure the depth of keyways.

Range mm	Weight without dial approx. g	Price without dial indicator
0 — 10	70	

My Dial Indicators No. 30 T – 32 Z are recommended for the above gages.

Inside Dial Gages No. 41



An inside dial gage with precision measuring rods, whose dial registers by $^1/_{100}$ mm. It is suitable for checking the accuracy of bored holes and the distance between two walls. The rods are arailable in the sizes listed below for automobile, engine, and machine plants, tool and ball bearing shops, for cylinder grinding, etc.

Transmission of gage reading from feeler pin to dial gage is accomplished by means of a rigid, accurately guided tubular mechanism and play is eliminated by a spring. This precludes inaccuracies such as occur in levers, bolts, etc.

The inside precision gage makes possible an easy, rapid gaging of drilled holes, thanks to the automatic centering of the double stop, whose convex surface is located concentric to the feeler pin.

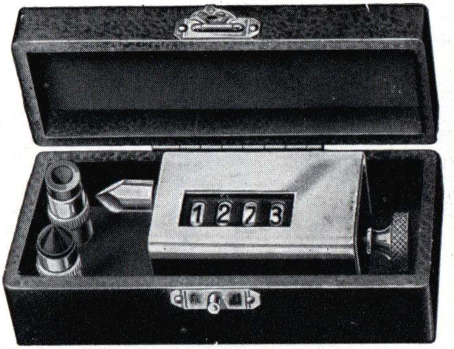
Application First insert proper feeler pin into inside precision gage. Adjustment is made with the aid of a ring gage or end blocks with holder or by a micrometer. By turning the dial, the dial gage is set at "0", so that ample deflections to both sides are possible. If gage is introduced into the hole to be tested, and lightly moved back and forth on the gaging pin, the pointer deflection shows deviation from the previously set measurement. Tapered bored holes, out-of-rounds and oversize at start of cut can be quickly determined without any trouble.

Price in wooden case without dial gage indicator

measuring range		measuring depth		approx. wt. incl. wooden case in kg	price each without dial gage
mm	inch	mm	inch		
6 – 8	$\frac{15}{64}$—$\frac{5}{16}$	100	4	0,400	
8 – 12	$\frac{5}{16}$—$\frac{15}{32}$	100	4	0 400	
12 – 20	$\frac{15}{32}$—$\frac{13}{16}$	110	$4\frac{5}{16}$	0,600	
18 – 35	$\frac{11}{16}$—$1\frac{3}{8}$	110	$4\frac{5}{16}$	0,700	
35 -- 60	$1\frac{3}{8}$—$2\frac{3}{8}$	200	$7\frac{3}{4}$	0,800	
50 – 100	2 - 4	260	$10\frac{1}{4}$	1,200	
50 – 160	2—$6\frac{1}{2}$	320	$12\frac{5}{8}$	3,000	
100 – 160	4—$6\frac{1}{2}$	320	$12\frac{5}{8}$	2,300	
160 – 280	$6\frac{1}{2}$ – $11\frac{1}{2}$	360	$14\frac{3}{8}$	3,800	

Dial indicators No. 30 T – 32 Z are recommended for above gages.

Tachometer No. 42

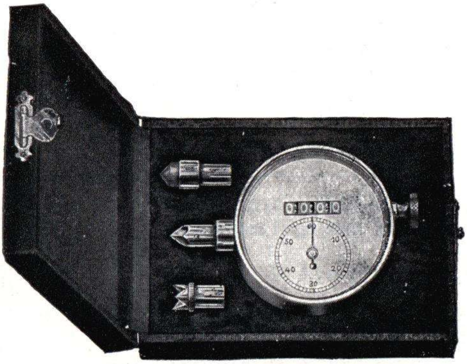


Four-digit columns, counts up to 10,000. Most efficient speed indicator which can be reset to zero instandly by simply turning knurled button. Always counts forwards, during both clockwise and counter-clockwise rotation. No reversing of tips, only one driving shank. Always ready for operation. Adapted for measuring up to 5,000 revolutions per minute. Nickel-plated metal housing.

Wt. in case approx. 135 g
Price with case

Hand Tachometer with Stop Watch No. 44

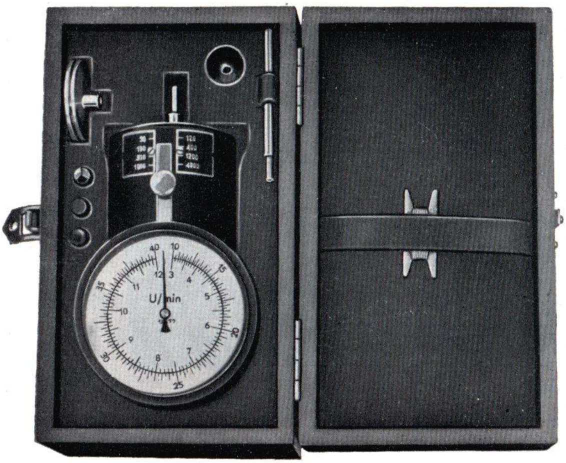
Four digits, counts up to 10,000, in nickel-plated brass case.



Wt. approx. 260 g
Price with case

This combination measuring device enables quick and accurate speed measurement. By turning the knurled button, the numbers are adjusted to zero, the clock movement is wound up and the seconds hand returned to zero. In other words, this tachometer is set for operation by one manipulation. In addition it is equipped with an idling arrangement so that watch and counter only begin to operate after a certain pressure is exerted. Counts forwards, whether rotating to left or right. Clock movement runs for one minute. Tachometer can be removed from article being gaged before expiration of one minute and speed calculated accordingly. Time and revolutions registered remain indicated when instrument is removed from running machine.

Hand Tachometer No. 45



Instructions of use enclosed with each instrument.

This instrument serves for the rapid determination of the speed of machines, line shafts, etc. Speed can be read off dial without any further calculation. Damage from overloading is not possible. Cutting speeds of 3 – 400 m per min. are gaged by means of a steel disc of 100 mm circumference, by dividing the indicated speed by 10.

Four different ranges, namely:

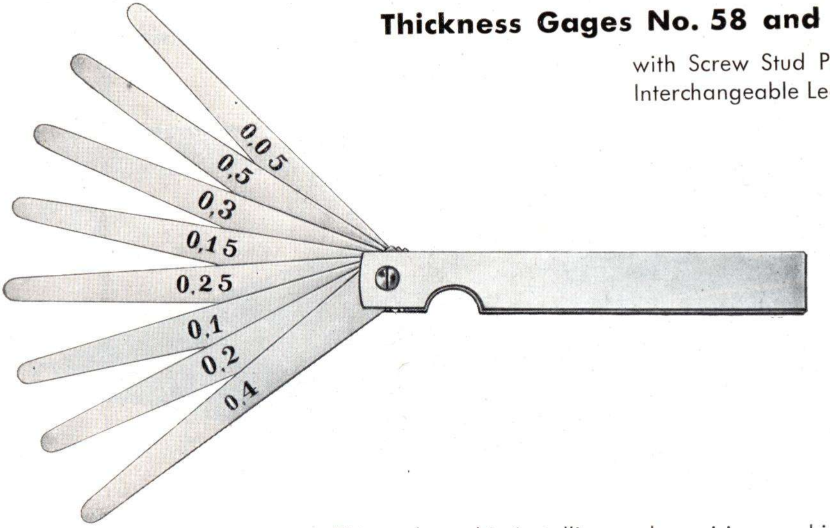
30— 120 in which 1 graduation line = 1 rotation

100— 400 in which 1 graduation line = 2 rotations

300—1200 in which 1 graduation line = 10 rotations

1000—4000 in which 1 graduation line = 20 rotations

Aprox. Wt. 500 g	Price with case



Thickness Gages No. 58 and 59

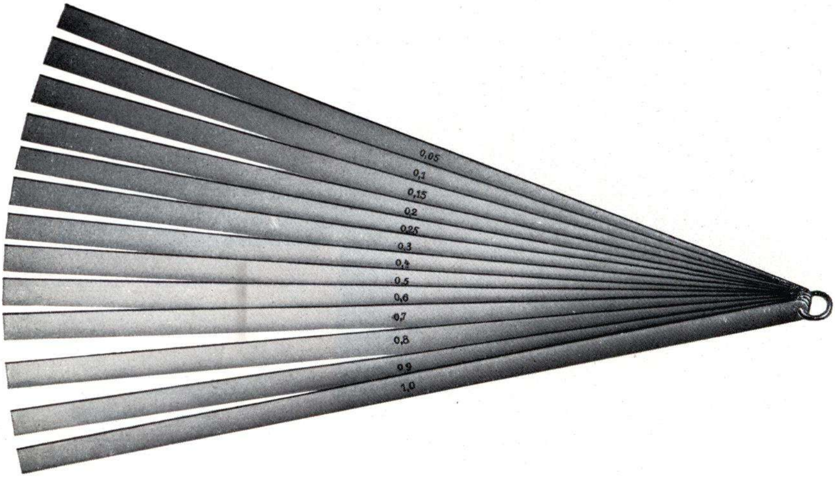
with Screw Stud Pivot,
Interchangeable Leaves

This tool, used in installing and repairing machinery, serves to test free play in guideways, bearings, etc. The spring temper steel leaves can be used individually or in combination.

Nr.	Number of Leaves	Length in mm	wt. in g	Price
58	with 8 leaves of 0.05 to 0.5 mm 0.05 0.1 0.15 0.2 0.25 0.3 0.4 0.5 mm	100	45	
58 A	with 14 leaves of 0.03 to 0.5 mm 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.15 0.2 0.25 0.3 0.4 0.5 mm	100	50	
59	with 13 leaves of 0.05 to 1 mm 0.05 0.1 0.15 0.2 0.25 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 mm	100	75	
59 A	with 20 leaves of 0.05 to 1 mm each graduated by 0.05 mm	100	110	
59 B	with 20 leaves of 0.1 – 2 mm each graduated by 0.1 mm	100	170	

Loose-Leaf Thickness Gages No. 58 LB and 59 LB

graduated from 0.05 to 0.5 mm and from 0.05 to 1 mm see No. 58 and 59

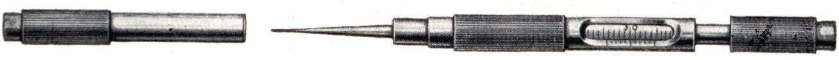


No.							
	Length of leaves	mm	350	500	400	600	1000
	Width of leaves	mm	6	6	13	13	13
58 LB	with 8 leaves of 0.05 to 0.5 mm	Price					
59 LB	with 13 leaves of 0.05 to 1 mm	Price					
	extra leaves of 1.5 2.0 2.5 3.0 mm	Price					

Nozzle Gauges No. 60 B

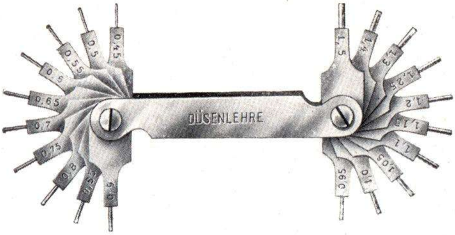
with round pin, of hardened steel Housing and protective cover are of German silver.

The round-pin gages are predominantly for engine and automobile manufacture.



Range mm	Taper	Vernier Reading mm	Approx. Wt. in g	Price
0 – 3	1 : 10	1/100	25	
0 – 5	1 : 10	1/100	60	

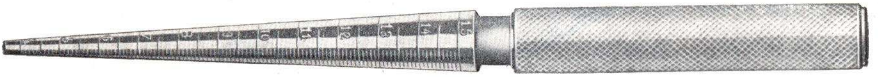
Nozzle Gages No. 60 F


DÜSENLEHRE
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
0.9
1.5
1.4
1.3
1.25
1.2
1.15
1.1
1.05
1.0
0.95

All types of nozzles can be gaged with this tool. In addition, it is very handy as a limit gage for small drilled or bored holes.

Size	Number and ∅ mm	Wt. approx. g	Price
I	with 20 steel plugs of 0.45 to 1.5 mm dia.	60	
II	with 20 steel plugs of 1.5 to 3 mm dia.	100	

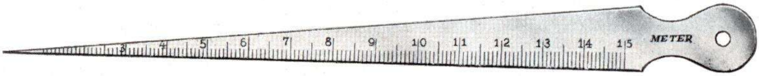
Taper Gages No. 61 round, of hardened tool steel



Range mm	Taper	Direct Reading mm	Approx. Reading mm	Approx. Wt. in g	Price
1 – 6	1 : 10	1/10	1/50	40	
4 – 15	1 : 10	1/10	1/50	200	
15 – 30	1 : 10	1/10	1/50	870	

Taper Gages No. 62 flat, of tool steel

In gaging, the graduated edge is applied to the wall of hole.



Range mm	Taper	Direct Reading mm	Approx. Reading mm	Approx. Wt. in g	Price
1 – 15	1 : 10	1/10	1/50	20	
15 – 30	1 : 10	1/10	1/50	75	
30 – 45	1 : 10	1/10	1/50	115	

Center Gages of Tool Steel

No. 64 55° for Whitworth thread

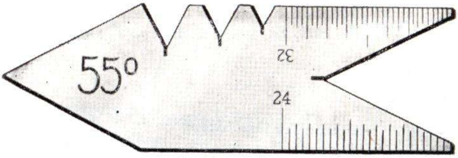
No. 64 60° for metric thread, lathe centers and plain grinding machine centers

No. 64 53° 8′ Loewenherz thread

To determine leads, the gages of 55 $^0/_0$ have graduations of 14, 20, 24 and 32 parts to 1 inch.

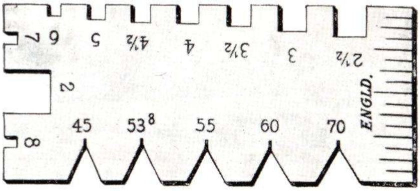
Gages of 60° have mm and $^1/_2$ mm graduation.

Gages of 53° 8′ are graduated to read in 0.5, 0.6, 0.7 and 0.8 mm.



Approx. Wt. g	Price
15	

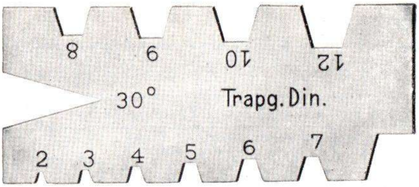
Combined Center Gage of Tool Steel No. 66



Approx. Wt. g	Price
20	

Trapezoidal Threading tool No. 67 of tool steel

for 2, 3, 4, 5, 6, 7, 8, 9, 10 and 12 mm lead German Engineering Standard.

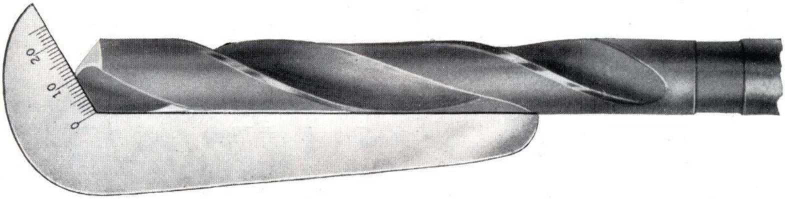


Approx. Wt. g	Price
20	

The threading tool must fit exactly into the respective groove. Then the cutting tool is set for both screw and nut threads, as both are of equal width at base, the only difference being in height. For the proper angle in grinding and truing the threading tool, the gage is equipped with a groove of 30° and one of 105°.

Drill Point Gage No. 68

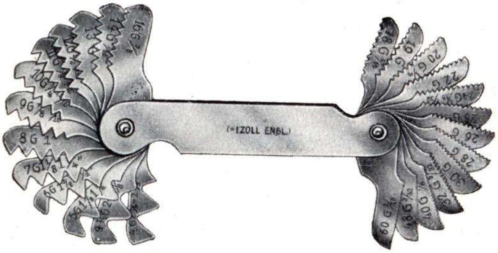
This tool fulfills the requirements of a gage for grinding drill points accurately. Each lip must not only be the same length but must also have the same angle in relation to the axis of the drill.



For drills up to to 50 mm dia.

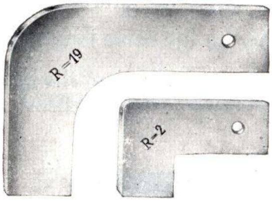
Approx. Wt. g	Price
35	

Screw Pitch Gages No. 69 for measuring outside and inside threads



No.		wt. approx. g	Price
69 W	for Whitworth thread, angle of thread 55° 28 leaves for the following pitches: 4 4,5 5 6 7 8 9 10 11 12 13 14 16 18 19 20 22 24 25 26 28 30 32 36 40 48 60 62 threads per inch	40	
69 SJ	DIN 60° with 24 leaves of 0,25 to 6 mm pitch	40	
69 R	for Whitworth pipe thread, angle of thread 55°, 6 leaves for 8 10 11 14 19 28 threads per inch	10	
69 D	with 20 leaves Whitworth thread and 20 leaves SJ thread combined in one case	30	

Fillet or Radius Gages No. 71 of high-quality steel



Each gage is of one piece and has the same inner and outer radius

with radii from 0,3 mm to 0,9 mm inclusive, in increments of $^1/_{10}$ mm

with radii from 1 mm to 15 mm inclusive, in increments of $^1/_2$ mm

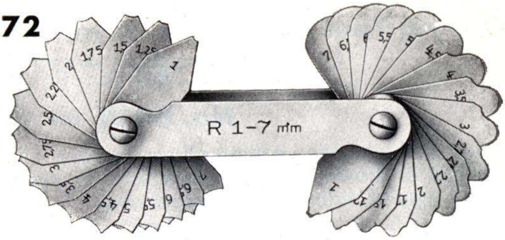
with radii from 16 mm to 50 mm inclusive, in increments of 1 mm

with radii of over 50 mm in increments of 5 mm

radii mm	Price	radii mm	Price	radii mm	Price
0,3—0,9		36—40		75	
1—10		41—45		80	
11—15		46—50		85	
16—20		55		90	
21—25		60		95	
26 – 30		65		100	
31—35		70			

Fillet or Radius Gages No. 72

to test concave and convex surfaces which are parts of a circle



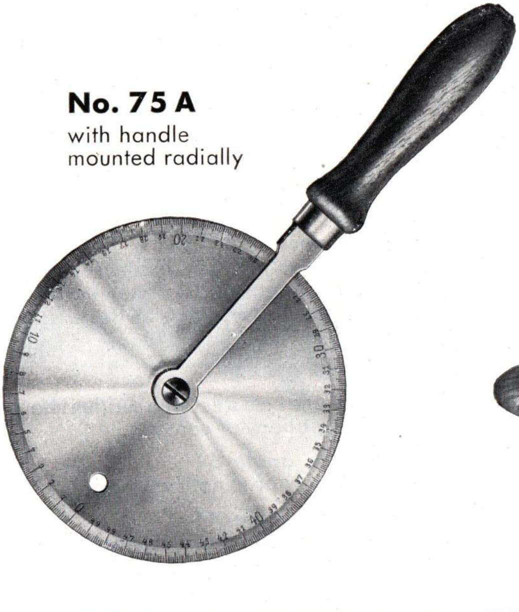
No.	Number of Leaves	Wt. approx. g	Price
72	with 17 steel leaves on each side, for concave and convex curves, for radii of 1 to 7 mm (1,0 1,25 1,5 1,75 2,0 2,25 2,5 2,75 3,0 3,5 4,0 4,5 5,0 5,5 6,0 6,5 7,0)	80	
72 a	with 16 steel leaves on each side, for concave and convex curves, for radii of 7,5 to 15,0 mm (7,5 8,0 8,5 9,0 9,5 10,0 10,5 11,0 11,5 12,0 12,5 13,0 13,5 14,0 14,5 15,0)	145	
72 b	with 15 steel leaves on each side, for concave and convex curves, for radii of 15,5 to 25 mm (15,5 16,0 16,5 17,0 17,5 18,0 18,5 19,0 19,5 20,0 21,0 22,0 23,0 24,0 25,0)	115	

Gaging Disc for boiler makers, ship yards etc.

Steel disc of 159.14 mm diameter = 500 mm circumference; bevelled on both sides, graduated to read in mm

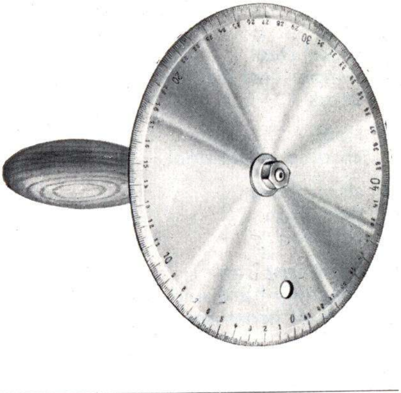
No. 75 A

with handle mounted radially



No. 75 B

with handle mounted in the direktion of the axis



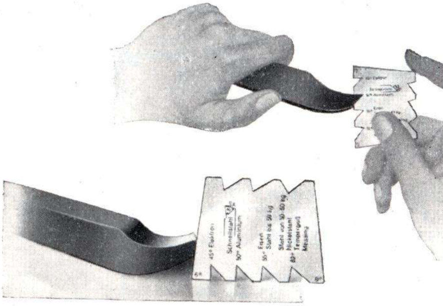
∅ mm	Perimeter mm	Wt. approx. ing.	Price
159,14	500	350	
both types with mm graduation on both sides			

Cutting Tool Gages for determining proper cutting angle

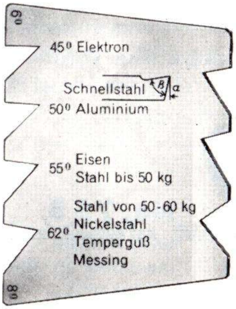
No. 80 for High Speed Cutting Tools

No. 80 W for Widia and similar Carbide Tipped tools

Gage for high speed cutting alloys, contains all angles used in modern shop practice. Applied as shown in below illustration. Check lip angle as shown at right, with regard to the type of material to be processed.



No. 80


6°
45° Elektron
Schnellstahl
β
α
50° Aluminium
55° Eisen
Stahl bis 50 kg
Stahl von 50-60 kg
62° Nickelstahl
Temperguß
Messing
8°

with the following angles:

45° Elektron

50° Aluminum

55° steel up to . . . . 50 kg

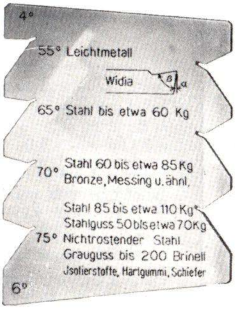
62° steel . . . . 50 – 60 kg
nickel steel
temper-cast iron
brass

68° steel . . . . 60 – 70 kg
chrome nickel steel

74° steel about . . . . 70 kg
gray iron
red iron

84° hard cast iron
specially hard and brittle
sorts of brass and bronze

Wt. approx. 25 g	Price


4°
55° Leichtmetall
Widia
β
α
65° Stahl bis etwa 60 Kg
70° Stahl 60 bis etwa 85 Kg
Bronze, Messing u. ähnl.
Stahl 85 bis etwa 110 Kg
Stahlguss 50 bis etwa 70 Kg
75° Nichtrostender Stahl
Grauguss bis 200 Brinell
Jsolierstoffe, Hartgummi, Schiefer
6°

No. 80 W

with the following angles:

55° light metal

65° steel up to approx. . . . . . . 60 kg
steel . . . . 60 – 85 kg

70° bronze, brass and related metals
steel . . . . 85 – 110 kg
cast steel . . . . . . 50 – 70 kg

75° stainless steel
gray iron to 200 Brinell insulating materials ebonite slate

80° steel . . . . 110 – 140 kg
cast steel . . . . . . 70 – 100 kg
hard steel (12 % manganese)
gray iron over 200 Brinell hardness
silicium cast iron (up to 16 % Si)

84° steel . . . . 140 – 180 kg
chilled castings

90° steel and cast steel with sudden sharp interruptions of contour

Clearance angle 6°
for materials of minor hardness

Clearance angle 4°
for materials of great hardness

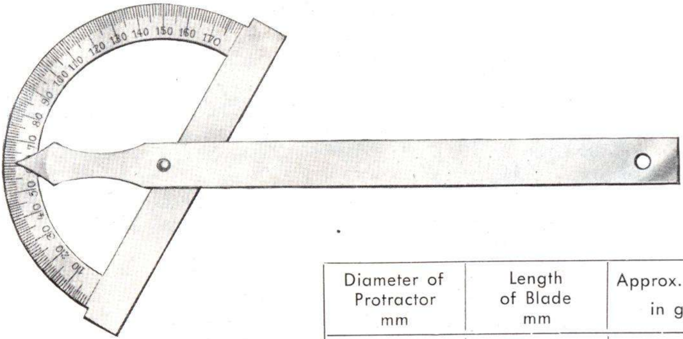
Wt. approx. 25 g	Price

Cutting tool gages are the proper auxiliaries for training lathehands to use the correct cutting angle, in other words, to achieve greatest efficiency.

Our gaes are designed in compliance with latest research results and may vary in appearance with those shown on this page.

Steel Protractor No. 91

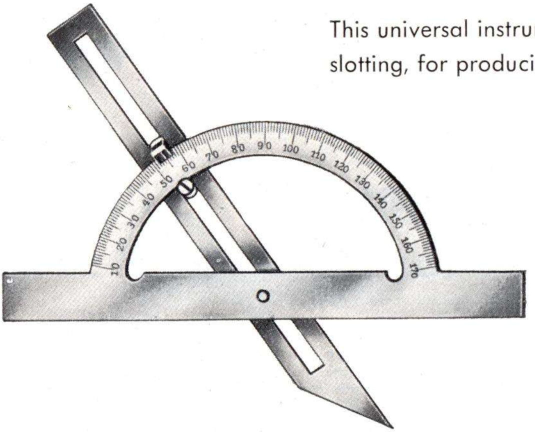
for producing small parts requiring angle measurement



Diameter of Protractor mm	Length of Blade mm	Approx. Wt. in g	Price
80	120	50	

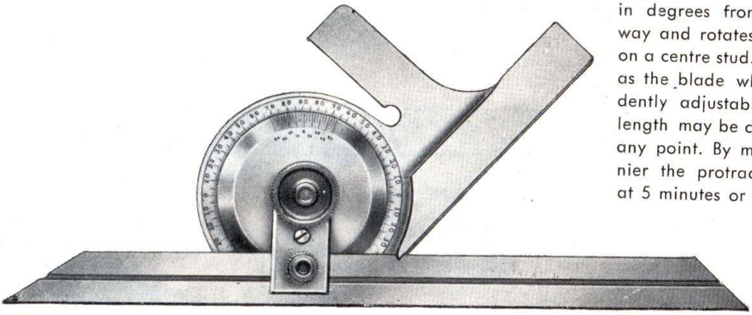
No. 92

This universal instrument is adapted for planing and slotting, for producing machine parts, etc.



Size	Diameter of Protractor mm	Length of Adjustable Blade mm	Approx. Wt. in g	Price
Nr. 92 A	100	150	80	
Nr. 92 B	150	300	285	
Nr. 92 C	200	400	600	

Steel Universal Bevel Protractors No. 93

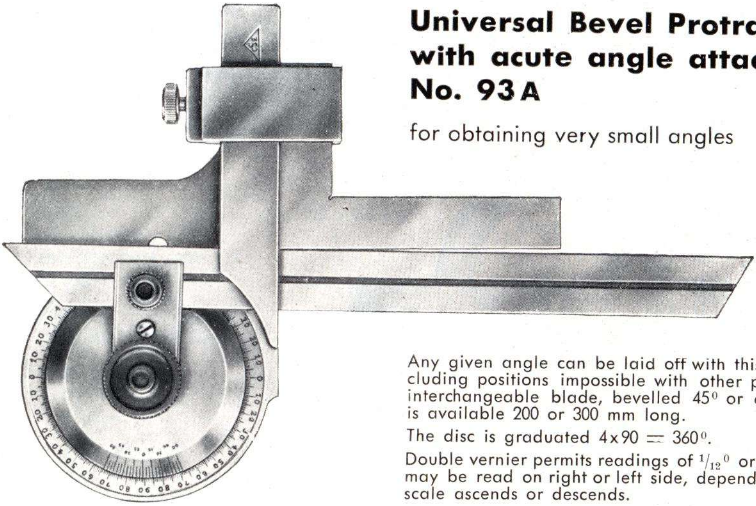


This precision instrument may be used as a rule, a graduated sqare, a T-square, a mitering angle, etc. The disc is graduated in degrees from 0 to 90 each way and rotates the entire circle on a centre stud. The disc as well as the blade which is independently adjustable along its full length may be clamped firmly at any point. By means of the vernier the protractor can be set at 5 minutes or $^1/_{12}{}^0$.

Length of Blade mm	Approx. Wt. in g	Price	Wooden Case	
			Approx. Wt. in g	Price
200	185		200	
300	215		260	
with foot	230		—	

Universal Bevel Protractors with acute angle attachment No. 93 A

for obtaining very small angles

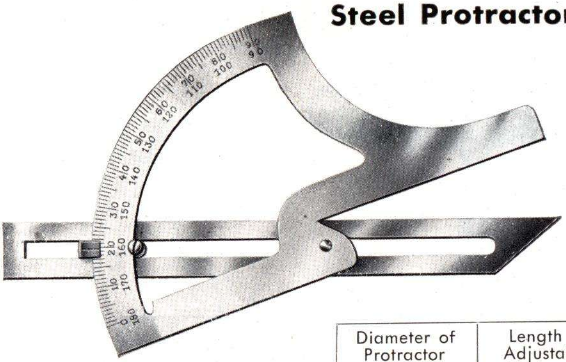


Any given angle can be laid off with this protractor including positions impossible with other protractors. The interchangeable blade, bevelled 45° or 60° at its ends is available 200 or 300 mm long.

The disc is graduated $4 \times 90 = 360^0$.

Double vernier permits readings of $^1/_{12}{}^0$ or 5 minutes, and may be read on right or left side, depending on whether scale ascends or descends.

Length of Blade mm	Approx. Wt. in g	Price	Wooden Case	
			Approx. Wt. in g	Price
200	240		200	
300	260		260	
with foot	230		—	

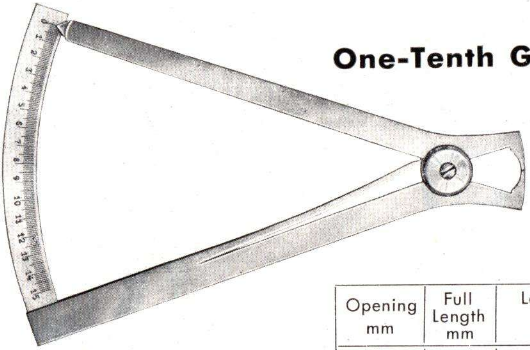


Steel Protractor No. 94

The protractors No. 91 and 92 are not suitable for measuring angles under 10°, but this protractor is well adapted for gaging such a small angle.

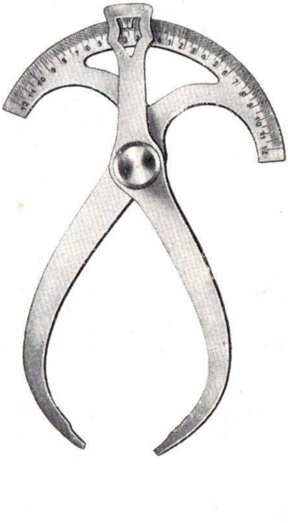
Range 0 to 180°

Diameter of Protractor mm	Length of Adjustable Blade mm	Approx. Wt. in g	Price
150	180	130	



One-Tenth Gage No. 96

Opening mm	Full Length mm	Length of Jaws to Point mm	Approx. Wt. in g	Price mm or inch.
0 – 15	160	25	50	

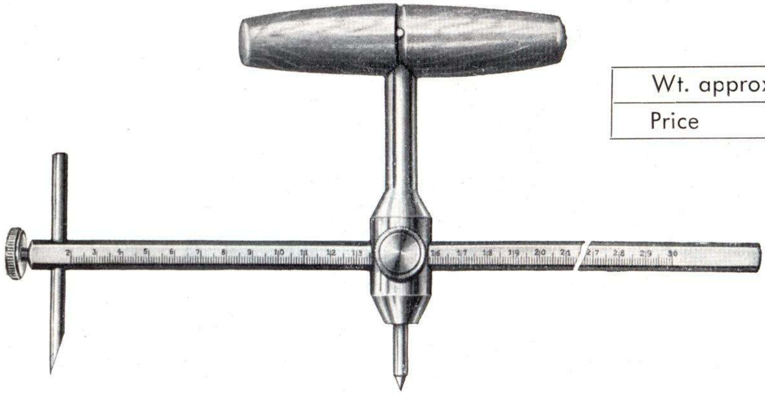


Outside Caliper No. 102

with Scale for measuring holes and Thickness. Hardened Ends.

Opening up to mm	Approx. Wt. in g	Price mm or inches
120	90	

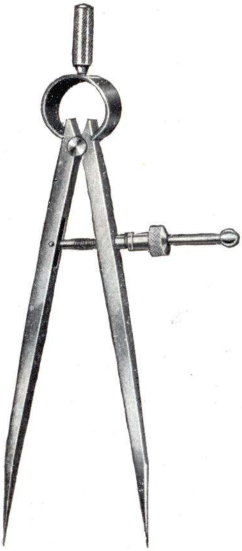
Beam Compass No. 104 for circles up to 600 mm or 24 inches diameter. Beam graduated to read in mm or inches.



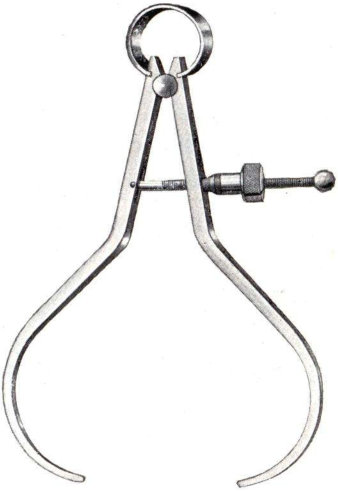
Wt. approx. 470 g	
Price	

Spring Calipers and Dividers Fay Pattern

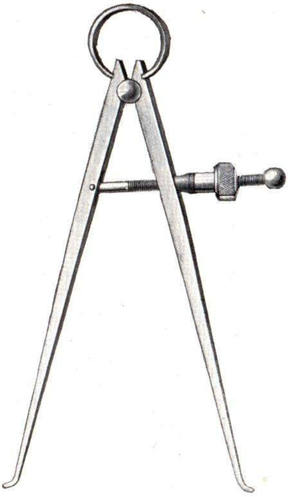
Dividers No. 107



Outside Calipers No. 107 G

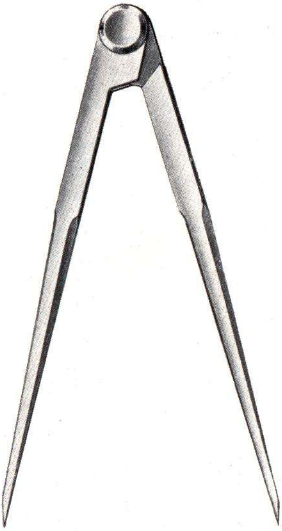


Inside Calipers No. 107 L



Length mm	No. 107 Approx. Wt. in g	No. 107 G Approx. Wt. in g	No. 107 L Approx. Wt. in g	Price No. 107—107 L
100	45	45	40	
125	50	50	45	
175	90	85	80	
225	160	200	150	
300	280	350	270	

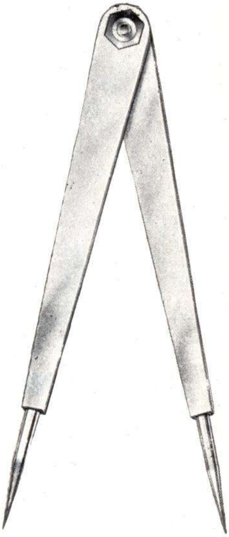
Dividers No. 108 and 108 A



No. 108

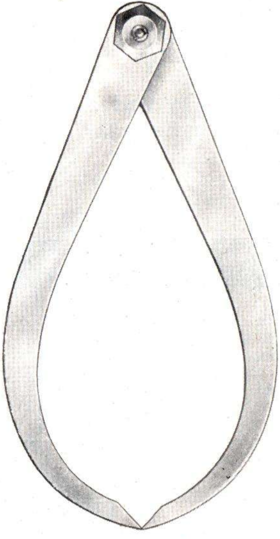
of high quality tool steel
with bevelled legs and milled,
three-part joint

No.	Length mm	Approx. Wt. in g	Price
108	200	150	
108 A	150	120	
	200	160	
	250	230	
	300	300	
	400	560	
	500	700	



No. 108 A

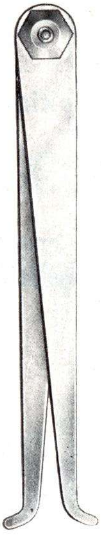
Outside Calipers No. 111 and Inside Calipers No. 114



No. 111

of hard-rolled sheet steel,
rounded-off edges, highly finished

No.	Length mm	Approx. Wt. in g	Price
111	150	70	
	200	100	
	300	270	
	400	600	
	500	750	
114	150	60	
	200	90	
	300	230	
	400	500	
	500	600	

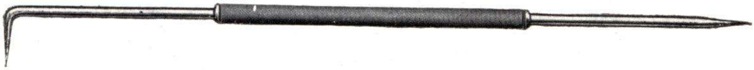


No. 114

Scriber No. 117A simple scriber of high quality steel

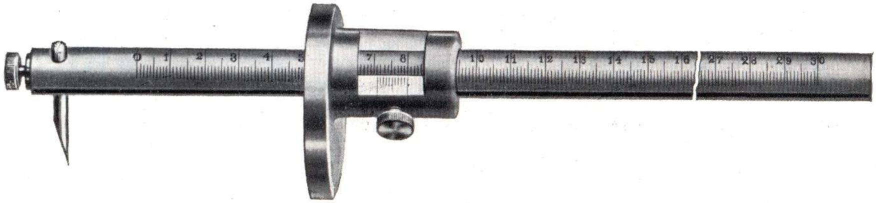
Length mm	Approx. Wt. in g	Price
180	20	

Scriber No. 117 B double scriber of high quality steel



Length mm	Approx. Wt. in g	Price
250	30	

Marking Gage No. 118 with round beam, graduated to read in mm, with $^{1}/_{10}$ mm vernier or in $^{1}/_{16}$ inches with $^{1}/_{128}$″ vernier

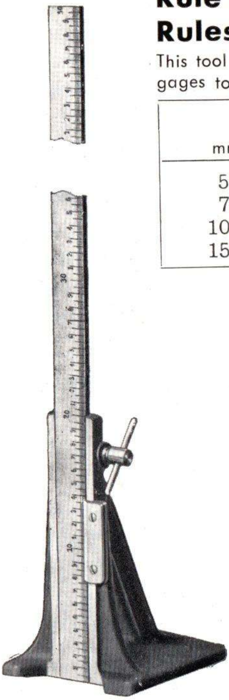


Length		Approx. Wt. in g	Price
mm	inches		
300	12	470	

Rule Holders with Sliding Narrow Steel Rules No. 120 graduated to read in mm or inches

This tool consists of a cast iron base with removable rule and serves to adjust surface gages to proper height. Can be read from very first millimeter.

Rule Height mm	 Height inch	 Width and Thickness mm	Approx. Wt. in kg	Price
500	20	30 x 6	2,8	
750	30	30 x 6	3,2	
1000	40	35 x 8	7,0	
1500	60	35 x 8	8,1	

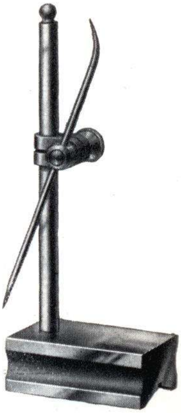


No. 120

Surface Gage No. 121

with V-grooved base

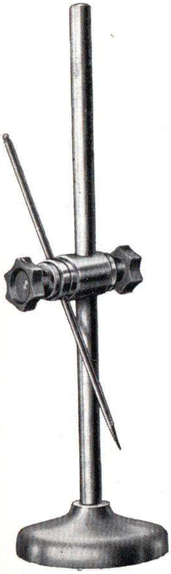
Height mm	Approx. Wt. in g	Price
150	320	



No. 121

Surface Gages No. 122

Height mm	Approx. Wt. in kg	Price	Height mm	Approx. Wt. in kg	Price
300	0,9		1000	7,6	
400	1,5		1500	10,0	
500	2,2		2000	15,0	
750	4,7				



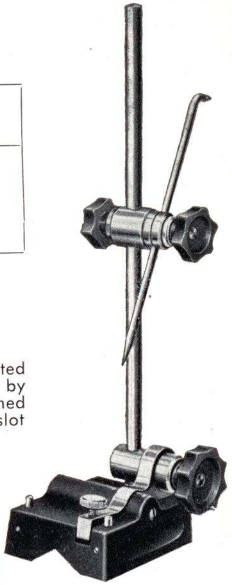
No. 122

Surface Gages No. 123

with V-grooved base

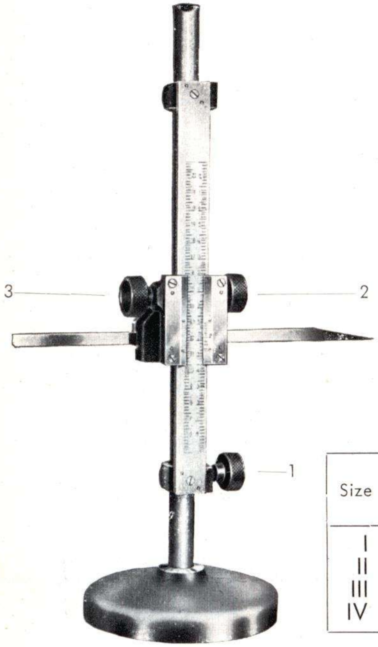
The upright bearing the rotating head for the scriber is mounted on a pivot in the base. Scriber is accurately adjustable by loosening clamp nut. The two pins in the base can be pushed down to bear against the edge of a surface plate or in the slot of a planer bed for linear work.

Height mm	Approx. Wt. in kg	Price
200	1,2	
300	1,5	
400	1,8	



No. 123

Precision Surface Gages No. 124



A sliding rule with two contact points is mounted on a column, which in turn is mounted in a secure base. The left half of this rule is graduated from bottom to top, reading for instance from 60 to 220 mm; the right side is graduated from the center on upwards and downwards, for instance every 80 mm. On the rule, which can be clamped tight, a slide with $\frac{1}{10}$ mm vernier and non-swivable, horizontal, unadjustably held scriber can be roughly and finely adjusted by a rack and pinion and fixed for marking.

Graduation on the left side serves for direct adjusting to the desired size, the right side serves for scribing from a reference dimension.

This device is available in 4 sizes:

Size	Range		Graduation		Vertical Adjustment of Rule	Price
	mm	inches	mm	inches		
I	60 - 380	$2\frac{3}{8}$ - 14	60 - 220	$2\frac{3}{8}$ - $8\frac{3}{4}$	1 x 160	
II	60 - 500	$2\frac{3}{8}$ - 20	60 - 280	$2\frac{3}{8}$ - $11\frac{1}{4}$	1 x 220	
III	70 - 770	$3\frac{1}{8}$ - 30	80 - 310	$3\frac{1}{8}$ - $12\frac{1}{8}$	2 x 230	
IV	70 - 1000	$3\frac{1}{8}$ - 40	80 - 390	$3\frac{1}{8}$ - $15\frac{3}{8}$	2 x 310	

Application: 1) Adjustment within a simple range (60—220 mm)

When the rule, resting on the lower contact point, is fixed by means of clamping screw 1, the slide is given rough adjustment by hand and fine adjustment by clamping screw 3 and fixed by tightening set screw 2. The tool is then ready for scribing.

2) Adjustment within Higher Ranges (220—380 mm)

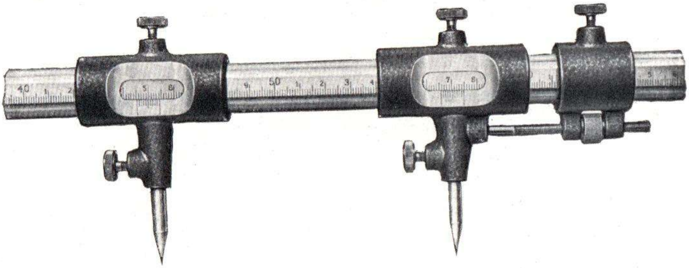
Raise slide to top contact point and fix by clamping screw 2. After loosening clamping screw 1, push rule upwards to the contact point on slide and tighten. After loosening clamping screw 2, proceed as under 1) above, taking into account the indicated shifting (160 mm). In sizes 3 and 4 provision is made for double extension.

3) Marking Upwards and Downwards from a Reference Dimension

First set slide as under 1) to reference dimension and fix by clamping screw 2. After loosening clamping screw 1, the right graduation is adjusted roughly and then set to "o" by fine adjusting screw 3. Then fix by means of clamping screw 1. After loosening clamping screw 2, the desired dimension can be fixed on right side scale, and marking made, upwards or downwards.
Adjustment in higher ranges is made accordingly, by raising scale once or twice.

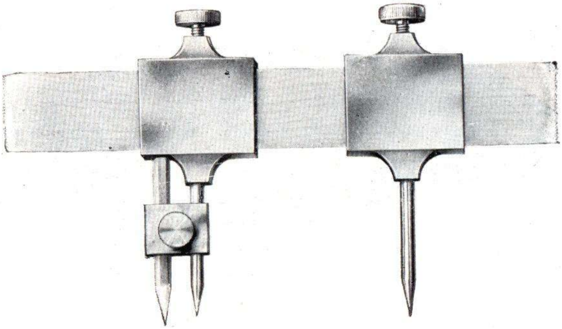
Steel Beam Trammels No. 126

with grooved guideway and interchangeable needle points



Range up to mm	Range up to inch	Diameter of Steel Beam mm	Approx. Wt. in kg	Price: mm or inches graduation	Price: extra charge for fine adjustment screw
1000	40	20	1,5		
1500	60	20	2,5		
2000	80	25	4,0		
3000	120	32	8,0		
4000	160	40	14,0		
5000	200	50	20,0		

Trammel Points No. 127 of brass with steel points, without beam

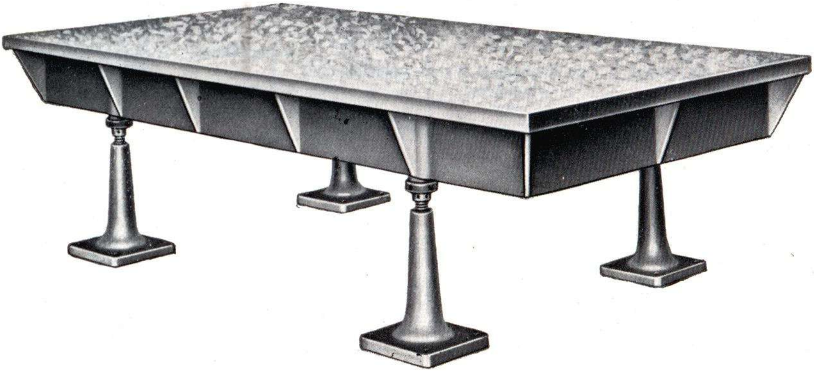


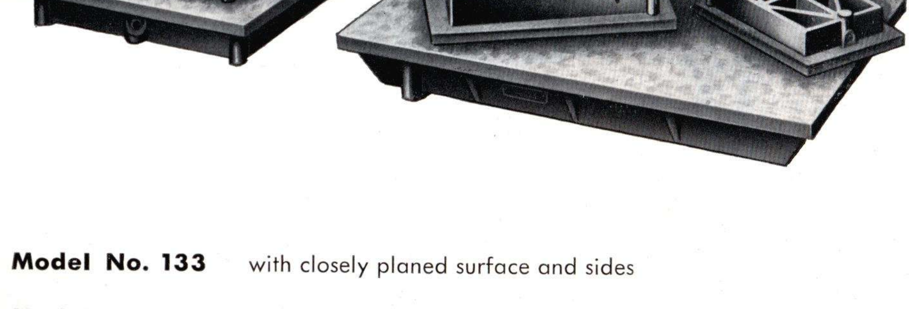
dimensions of beam cross-section	Wt. approx.	Price per pair without wooden beam	Price for pencil holder
30 x 15	500		

Lay-Out or Surface Plates No. 133/134 of dense, castiron, reinforced surface plate

Tables up to 2000 x 1000 mm have 3 supports to assure a truly level surface.

Due to heavier loads, larger surfaces are more liable to distortion and are therefore made with 4 supports. Such tables require a solid foundation, and we recommend our adjustable base plates to assure level standing.





Model No. 133 with closely planed surface and sides

Model No. 134/I with closely scraped surface

Model No. 134/II with normal scraping on surface

Lay-Out or Surface Plates No. 133/134

Prices for Surface Plates

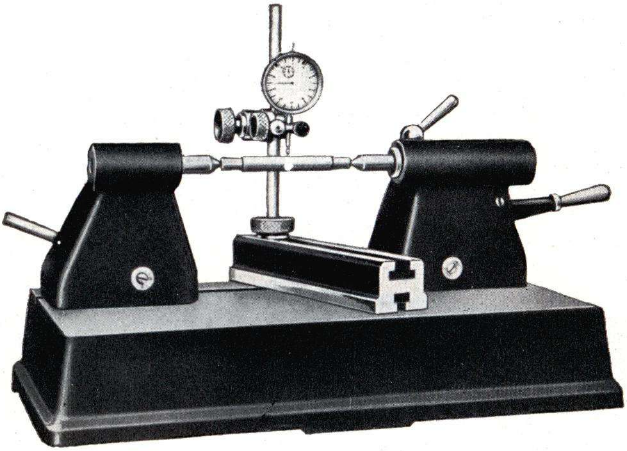
without feet

Length mm	Width mm	Weight in kg	No. 133 planed DIN 876-III	No. 134-II standard scraped DIN 876-II	No. 134-I closely scraped DIN 876-I	handles
150	150	5				of wood
200	200	7				
300	200	12				
300	300	18				per pair
400	300	25				of iron
400	400	35				
500	400	45				
500	500	55				per pair
600	500	65				4 iron handles
800	500	100				per set
1000	750	200				
1000	1000	240				
1200	800	260				
1500	1000	500				4 adjustable feet
2000	1000	700				
2000	1250	980				
2000	1500	1200				
2500	1000	1050				Wt. 100 kg
2500	1250	1400				4 adjustable feet
2500	1500	1600				
3000	1250	1800				
3000	1500	2300				Wt. 135 kg

Reconditioning of surface plates: We recondition surface plates expertly and at moderate cost, also plates not of our own manufacture.

Surface Plates with Two Tailstocks

to test true running, for marking off etc.



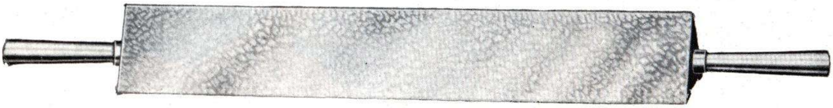
No. 135

Principal part is a scraped surface plate of dense, cast iron, reinforced top plate; 3 base supports, equipped with T-slot to receive tailstocks. One tailstock has a dead center, the other a resilient tailstock spindle.

Use my dial indicator stands on page 26 with these surface plates.

Surface Plate		Height of Centres	Maximum Distance between Centers	Approx. Wt. in kg	Price
Length mm	Width mm	mm	mm		
500	250	125	250	50	
750	250	125	500	75	
1000	250	125	750	95	
1600	280	190	1250	210	
1600	280	250	1200	220	
1600	400	250	1200	265	
2000	400	250	1600	350	

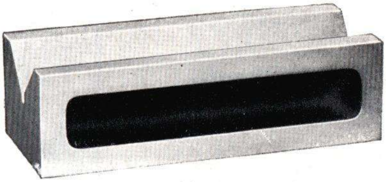
Paralles No. 136 of dense, cast iron with two iron handles. Closely scraped on the two surfaces comprising the angle. For truing V-ways ves and similar jobs.



45° angle				60° angle			
Length mm	Width mm	Approx. Wt. in kg	Price	Length mm	Width mm	Approx. Wt. in kg	Price
250	50	1,8		250	45	1,7	
350	65	2,7		350	50	2,2	
500	75	5,8		500	60	4,3	
750	95	11,1		750	80	9,6	
1000	110	21,0		1000	100	18,0	
1500	110	40,0		1500	110	36,0	

Parallels with different angles or for special purposes are also available.

V Blocks No. 137/138 of dense cast iron for laying out, truing and checking round parts



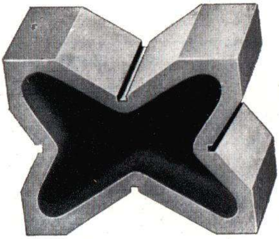
No. 137 precision **planed**

No. 138 base ground and V-surfaces trued

Length mm	Width at Base mm	Approx. Wt. in kg	Price **No. 137** planed Piece	 Pair	 **No. 138** trued Piece	 Pair
100	40	0,6				
150	50	1,3				
200	70	2,7				
300	100	7,3				

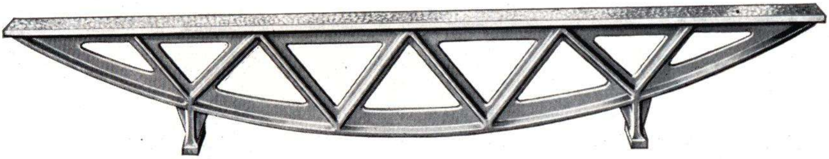
If manufactured so that two blocks fit to each other 5% price increase

V Blocks No. 139 of dense cast iron with 4 V's, planed and polished, V's trued, for laying out and testing.



Size	Length mm	Width mm	Height mm	Approx. Wt. in kg	Price
I	60	120	100	4,8	
II	75	150	130	10,0	
III	90	200	170	20,6	

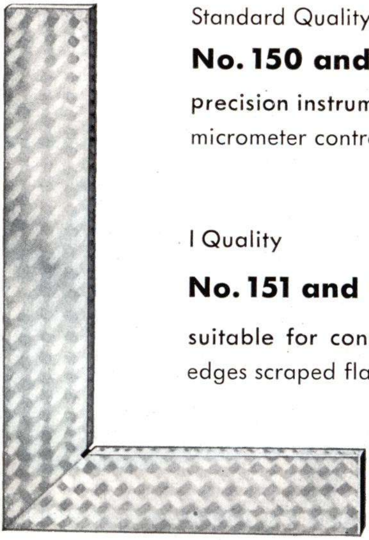
Straight Edges No. 140 of dense cast iron, testing surface accurately trued and closely scraped, edges planed



Length mm	Width mm	Approx. Wt. in kg	Price	Length mm	Width mm	Approx. Wt. in kg	Price
500	40	3,2		2000	70	45	
750	45	7,0		3000	90	120	
1000	50	12,5		4000	110	220	
1500	60	28,0		5000	130	450	

Flat try square

Solid Steel Try Squares of best Material



Standard Quality

No. 150 and 150 A

precision instruments of greatest accuracy
micrometer controlled and finely scraped

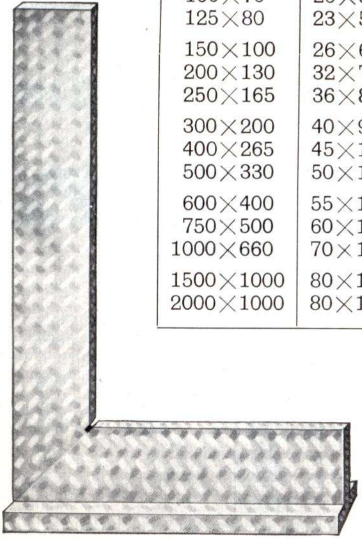
I Quality

No. 151 and 151 A

suitable for control purposes and precision work
edges scraped flat, sides accurately trued

up to 600 x 400 mm these squares are made of unannealed sheet steel. The larger models are forged of **one piece.**

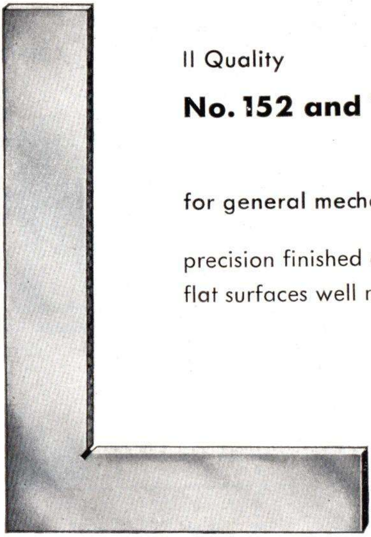
Back square



Length of Blade and Beam mm	Width and Thickness	Flat Try Square			Back Square		
		Appr. Wt. in kg	No. 150 Price	No. 151 Price	Appr. Wt. in kg	No. 150 A Price	No. 151 A Price
75×50	14×4	0,05			0,07		
100×70	20×5	0,12			0,17		
125×80	23×5,5	0,18			0,26		
150×100	26×6	0,3			0,4		
200×130	32×7	0,5			0,8		
250×165	36×8	0,9			1,2		
300×200	40×9	1,3			1,9		
400×265	45×10	2,2			3,2		
500×330	50×11	3,4			4,8		
600×400	55×12	5,0			7,0		
750×500	60×13	7,3			10,4		
1000×660	70×14	12,3			17,3		
1500×1000	80×15	23,0			33,0		
2000×1000	80×15	31,0			42,0		

Flat try square

Try Squares of Best Steel



II Quality

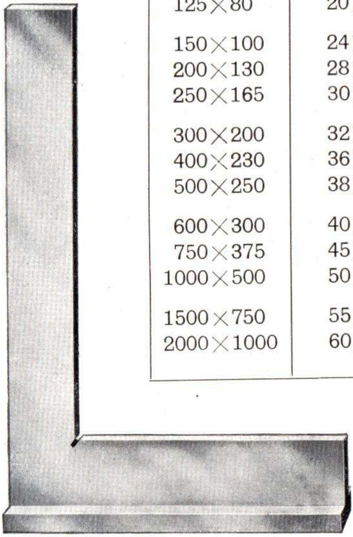
No. 152 and 152 A

for general mechanical engineering,

precision finished edges,
flat surfaces well machined

Squares up to 600 x 300 mm are cut of unannealed steel.

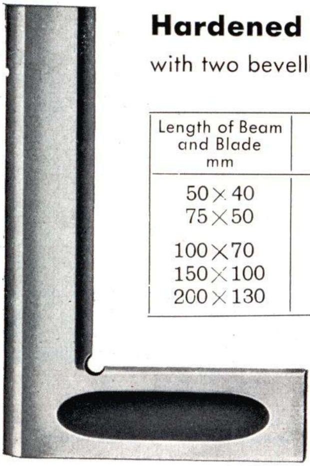
Back square



Length of Blade and Beam mm	Width and Thickness mm	Flat Try Square		Back Square	
		Appr. Wt. in kg	No. 152 Price	Appr. Wt. in kg	No. 152 A Price
75×50	14×4	0,05		0,07	
100×70	18×4	0,08		0,12	
125×80	20×5	0,14		0,2	
150×100	24×5	0,2		0,3	
200×130	28×6	0,4		0,6	
250×165	30×7	0,6		0,9	
300×200	32×7	0,8		1,2	
400×230	36×8	1,4		1,9	
500×250	38×8	1,7		2,3	
600×300	40×9	2,5		3,3	
750×375	45×10	3,8		5,2	
1000×500	50×11	6,3		8,4	
1500×750	55×11	10,4		14,0	
2000×1000	60×12	16,6		22,3	

Hardened Steel Squares

finest precision-made control instruments
with ground edges of highest precision
flat surfaces accurately ground
German Engineering Standard Precision DIN 875

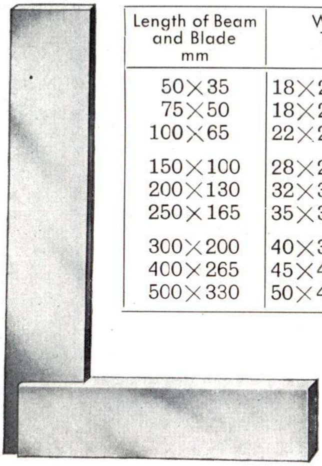


Hardened Bevel Edge Flat Try Squares No. 154

with two bevelled edges on both sides of blade

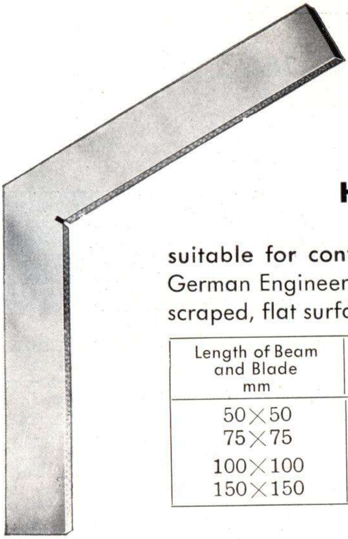
Length of Beam and Blade mm	Width and Thickness mm	Approx. Wt. g	Price	Price of wooden case
50×40	13×4	35		
75×50	14×4	50		
100×70	20×5	100		
150×100	26×6	230		
200×130	32×7	460		

Hardened Try Squares No. 155 with Stock Support



Length of Beam and Blade mm	Width and Thickness mm		Approx. Wt. g	Price	Price of wooden case
50×35	18×2	16×10	75		
75×50	18×2	16×10	100		
100×65	22×2	20×11	140		
150×100	28×2,5	25×14	350		
200×130	32×3	28×15	560		
250×165	35×3	32×16	900		
300×200	40×3,5	35×18	1300		
400×265	45×4	40×20	2000		
500×330	50×4.5	44×22	3000		

Try Squares of Best Steel



Hexagon Angle No. 156-I I Quality

suitable for control purposes
German Engineering Standard Precision DIN 875 edges precision scraped, flat surfaces trued

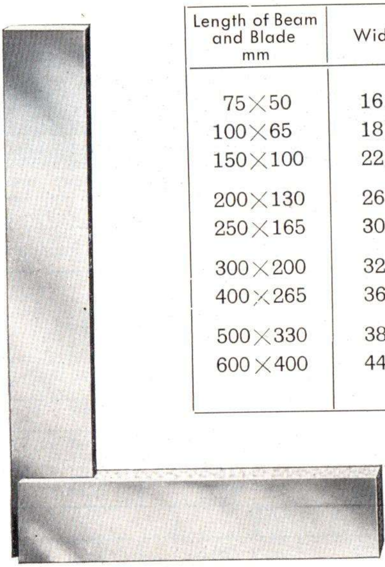
Length of Beam and Blade mm	Width and Thickness mm	Approx. Wt. g	Price
50×50	13×3	30	
75×75	16×4	55	
100×100	20×5	150	
150×150	25×5	285	

Try-Squares, Stock Support Type

I Quality No. 158-I

suitable for control purposes and for precision work
German Engineering Standard Precision DIN 875-I
edges precision scraped, flat surfaces trued

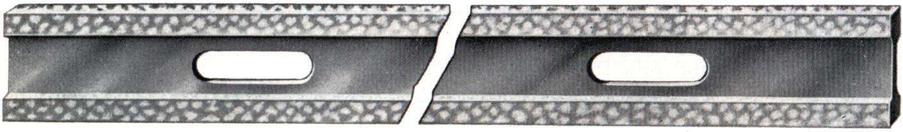
Length of Beam and Blade mm	Width and Thickness mm		Approx. Wt. g	Price
75×50	16×2	14×10	70	
100×65	18×2	16×10	110	
150×100	22×2	20×12	240	
200×130	26×3	24×14	460	
250×165	30×3	28×16	760	
300×200	32×3	30×18	1070	
400×265	36×4	34×20	1850	
500×330	38×4	36×22	2650	
600×400	44×4,5	42×23	3900	



Steel Straight Edges of best suitable steel

Standard Quality No. 160

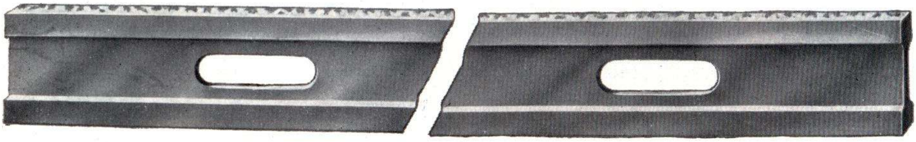
Precision tools of maximum accuracy
German Engineering Standard Precision DIN 874
Edges and flats are micrometer gaged and scraped



Length mm	Height and Width mm	Approx. Wt. kg	Price
I cross-section without slots			
500	50×10	1,2	
750	50×10	2,1	
1000	60×12	5,0	
1500	70×14	8,0	
I cross-section with 2 slots			
2000	90×15	14,8	
2500	100×16	22,0	
3000	120×18	36,0	
4000	140×20	62,0	

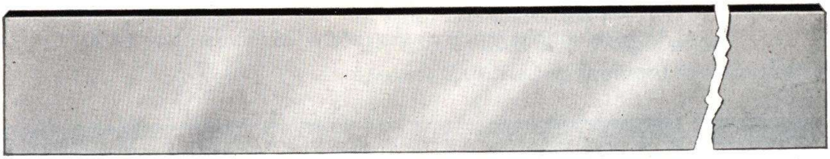
I Quality No. 161

for control pruposes and precision work
German Engineering Standard Precision DIN 874-I
Edges precision-scraped, flats trued



Length mm	Height and Width mm	Approx. Wt. kg	Price
rectangular cross-section without slots			
500	40×9	1,4	
750	45×9	2,4	
1000	55×11	4,8	
1500	60×12	8,5	
2000	76×14	15,4	
I cross-section with 2 slots			
2500	80×15	16,5	
3000	100×16	26,4	
4000	120×18	48,0	
I cross-section with 4 slots			
5000	140×20	78,0	
6000	160×23	120,0	

Steel Straight Edges No. 162 of best suitable steel



II Quality for general mechanical engineering

German Engineering Standard Precision DIN 874-II precision edges, true flats

Length mm	Height and Width mm	Approx. Wt. in kg	Price	Length mm	Height and Width mm	Approx. Wt. in kg	Price
rectangular cross-section without slots				rectangular cross-section without slots			
500	40×8	1,3		2500	70×14	19,3	
750	40×8	1,9		3000	80×15	28.5	
				with 2 slots			
1000	45×9	3,2		4000	100×16	51,0	
1500	55×11	5,9		5000	120×18	85,0	
2000	60×12	11,3		6000	130×20	123,0	

Keyseat Rules No. 164

for scribing keyways on shafts,
belt pulleys, etc.
alignment and accuracy on all sides

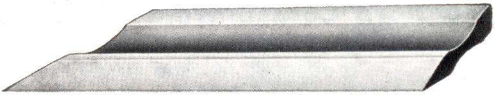
Length mm	Approx. Wt. in g	Price	Length mm	Approx. Wt. in g	Price
150	100		300	310	
200	140		400	600	
			500	1050	

Toolmakers' Knife-Edges Straight Edges No. 165

Finest control instruments of maximum precision

Germ. Eng. Standard Precision DIN 874

These gages are of hardened cast steel, have wedge-shaped cross-section and are ground to maximum accuracy. Edges are absolutely straight.



Length mm	Approx. Wt. in g	Price	Wooden Case Price	Leather Case Price
75	25			
100	60			
125	75			
150	100			
200	150			
300	220			
400	500			
500	950			

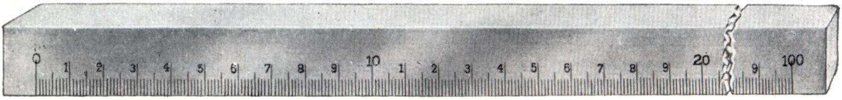
Steel Rules

of best adapted steel
Machine Divided – Exactly Graduated

All graduations made at the reference temperature of 20° C.

Master Rules No. 167

DIN 865 of square cross-section



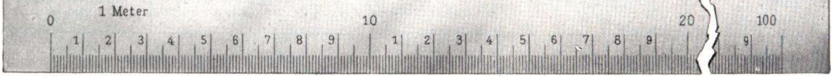
A rule of finest workmanship and greatest accuracy fulfilling all the requirements of a test gage for tool and machine production.

Length mm	Length inch	Width and Thickness mm	Width and Thickness inch	Approx. Wt. in kg	Permissible Variation in μ	Price
520	21	15×15	$^5/_8$x$^5/_8$	1,4	± 15	
1020	41	20×20	$^3/_4$x$^3/_4$	3,2	± 20	
1520	61	25×25	1x1	7,5	± 25	
2020	81	25×25	1x1	10,0	± 30	

Graduation lines are 0,08 mm thick and still easly visible to the unaided eye. Still finer graduation lines are available on special request without extra charge.

Standard Control Rule No. 168 EF

graduated to read in mm or inches with margins at both ends and scraped edges German Engineering Standard Precision DIN 865



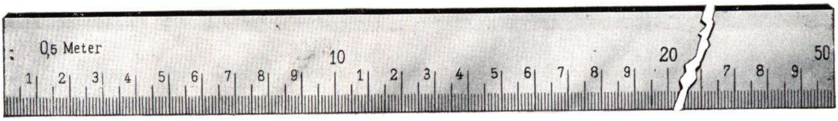
Dimensions	Approx. Wt. kg	Permissible Variation in μ	Price
mm 1020 x 40 x 10 inch 41 x 1$^5/_8$ x $^3/_8$	3,2	± 0,02	

Standard Shop Rules No. 168 graduated to read in mm or inches,
with margins at both ends and scraped edges
as illustrated under 168 EF
can also be used as a straight edge
German Engineering Standard Precision DIN 866-I

0
1 Meter
10
20
100

Length mm	Length inch	Width and Thickness mm	Approx. Wt kg	Permissible Variation mm	Price
500	20	30×6	0,7	± 0,03	
1000	40	40×9	2,8	± 0,04	
1500	60	45×9	4,8	± 0,05	
2000	80	50×10	7,9	± 0,06	
3000	120	55×11	14,2	± 0,08	
4000	160	60×12	22,4	± 0,10	
5000	200	70×14	46,0	± 0,12	

Shop Rules No. 169 graduated to read in mm or inches, without margins.
Extreme accuracy of end measurement is not claimed for this rule, but it is a convenient tool for certain classes of work.
German Engineering Standard Precision DIN 866-II



Length mm	Length inch	Width and Thickness mm	Approx. Wt. kg	Permissible Variation mm	Price
500	20	25×5	0,5	± 0,07	
1000	40	30×6	1,4	± 0,10	
1500	60	35×8	3,3	± 0,12	
2000	80	40×8	5,0	± 0,15	
3000	120	45×9	9,6	± 0,20	
4000	160	50×10	15,7	± 0,25	
5000	200	60×12	28,0	± 0,30	

Rules for Pattern Makers

Additional price per meter of graduation

Rule No. 169 is also available with shrinkage allowance.

Hardened Rules Machine divided and graduated (not printed)

Original graduations

Each line is drawn by precision dividing machines, the first centimeter also being accurately graduated. Edges ground straight.

Our rules fulfill all specifications in regard to precision.

The following machine divided rules are of special spring-tempered steel and of first-class workmanship. Black graduation lines and numbers contrast sharply and clearly with a light-colored background. The large figures are very well legible.

For practical reasons, rules with 1 mm graduation are preferred to rules with 1/2 mm graduation, because the latter cause eyestrain and errors in reading the lines.

Inferior Types which we do NOT manufacture

There are a number of types of steel rules on the market with etched graduations and numbers. Rules of this type are highly inaccurate, variations of 3/10 mm are by no means exceptional. Etched figures and graduations soon begin to wear off from handling. The edges of such rules are not true, and the beginnings are not accurate. Etched steel rules are not suitable for precision work.

No. 170 graduated to read in 1 mm (without 1/2 mm)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

No. 171 graduated to read in 1/16 inches on top and in 1 mm on bottom (no 1/2 mm graduation)

1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Hardened Rules machine divided and graduated (not etched)

No. 175 graduated on top and bottom to read in 1 mm (no 1/2 mm division)

No. 176 graduated to read in 1 mm on top and 1/2 mm on bottom

No. 177 for cabinet makers graduated on bottom only; shrink 0.8%, or 1%, or 1.25% or 1.5% or 2%, Length 500 and 1000 mm 2.25%, or 2.5% or 3% too.

SCHWIND-MASS 1%

No. 178 for cabinet makers in 3 graduations; shrink 1% and 1.5% on front of rule, 2% on rear.

Prices for Rules No. 170 to 178

No.	Length . . . . . . mm	100	150	200	250	300 S	300	500 S
	width and thickness mm	13 x 0.3	13 x 0.3	15 x 0.5	20 x 0.6	15 x 0.5	25 x 0.7	19 x 0.6
	weight . . . approx. g	4	5	12	25	20	40	50
170	Price							
171	Price							
175	Price							
176	Price							
177	for cabinet makers							
	chrome plated net							

No.	Length . . . . . . mm	500	1000 S	1000	1500	2000	3000
	width and thickness mm	30 x 0.8	19 x 0.6	35 x 1.3	35 x 1.3	35 x 1.3	40 x 1.5
	weight . . . approx. g	105	95	380	550	760	1450
170	Price						
171	Price						
175	Price						
176	Price						
177	for cabinet makers						
178	for cabinet makers						
	chrome plated net						

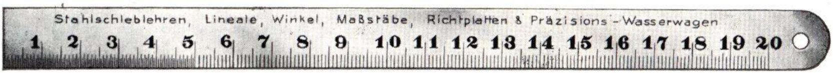
Hardened Rules machine divided and numbered (not etched)

No. 180 extra narrow, thin, and flexible, graduated to read 1 mm on top and $^1/_2$ mm on bottom

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Length mm	width and thickness mm	weight, approx. g	Price
200	13 x 0.3	7	
250	13 x 0.3	8	
300	13 x 0.3	10	
500	15 x 0.5	30	

For Novelty Advertising we recommend our pocket rules of spring-tempered special steel as illustrated below, with metal-rimmed leather case.


Stahlschieblehren, Lineale, Winkel, Maßstäbe, Richtplatten & Präzisions-Wasserwagen
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

These rules are a favorite novelty advertising article for tool manufacturers etc., as they are not only very accurate but also of very handy size and can be carried in the pocket.

Novelties of this kind represent a good, permanent and conspicuous advertising article for certain professions.

Prices upon request; please indicate text and quantity

Precision Levels with sensitive vials

Our company has devoted its efforts especially to the prôduction of levels and we manufacture high quality precision levels fòr machine construction a moderate prices•

Design

is fully suitable for the respective requirements.

Housing

is of high quality cast iron and well balanced. The vial is set so that breakage due to fall or shock is reduced to a minimum. In truing shafts, cylinders, V-guideways, etc., align the level by means of the auxiliary level.

Vial

is of special Jena glass, ground inside to tubular shape and filled with chemically pure sulphuric ether. The center of the vial is at the highest point of the concave inside the tube, from which point graduations of 2 mm run to right and left along the vial.
In winter time the bubble in the vial is longer, in summer it is shorter.

Sensitivity

We manufacture levels of various degrees of sensitivity as follows:

Standard Sensitivity:
Sensitivity 0.2—0.8 mm per meter. Depending on the size of the level, one division equals 0.2 to 0.8 mm deviation per meter. This standard type of level is best adapted for mechanical engineering and tool-making.

HE Highly sensitive:
Sensitivity approx. 0.1 mm per meter. One division corresponds to 0.1 mm deviation per meter. Recommended for control purposes and very exact work.

EHE Extra sensitive:
Sensitivity approx. 0.04 mm per meter. One graduation line corresponds to 0.04 mm deviation per meter. Due to its high degree of sensitivity, this level is only used in exceptional cases.

HEHE Super-sensitive:
Sensitivity approx. 0.02 mm per meter. One graduation line corresponds to 0.02 mm deviation per meter. This level with insulated handle and special glass over the parallel vial is only applied in very special cases, because of its extreme sensitivity.

Because of their high sensitivity

precision levels must have their vials protected against direct sunrays. The temperature of bare hands also effects levels. The level and the body to be tested must have the same temperature. Where super-sensitive levels are employed, uniform room temperature is indispensable. If applied improperly the thermal effects of room, sun or body temperature can affect a level as long as 15 minutes and for this reason a second levelling is made with the instrument in reversed position. One fourth of a graduation is still well legible. The base of the level and the surface to be tested must be absolutely clean.

All Surfaces

are scraped with great care, exactly parallel to the axis of the vial so that these levels can be readily applied for multiple purposes.

Heretofore it was always difficult

to work quickly and accurately without these data. If sensitivity is known, systematic procedure is possible as shown in the following:

A machine $1^1/_2$ m long is to be installed, special accuracy is not essential (e. g. a wood-working machine). Level at disposal (1 division = 0.5 mm per meter) shows approx. a deviation of 5 divisions.

Mode of calculation:

Sensitivity (0.5) × division (5) × length in meters (1.5) gives an offlevel variation of $0.5 \times 5 \times 1.5 = 3.75$ mm.

If a shim of 3.75 mm thickness is underlaid, the machine immediately stands perfectly level. If the machine to be set up is a precision machine tool with which complicated parts are to be machined to highest, level-controlled trueness, absolute levelness in the set-up of such machine must be assured.

After the above has been done, it was found by checking once more, that there was still a deviation of $^1/_4$ division, so that $0.5 \times {}^1/_4 \times 1.5 = 0.2$ mm would still have to be underlaid. This example shows the extreme accuracy obtainable with our levels. Where the sensitivity of a vial is not stated on a level, it must be determined by means of a plane and a thickness gage or similar instruments which is a time-consuming, complicated process.

The sensitivities listed are approximate, minor plus or minus variations are possible. The actual sensitivity of each individual level is imprinted thereon.

Result

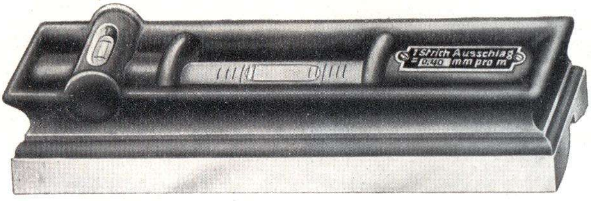
A level on which the respective sensitivity is imprinted will always be preferred to one on which the sensitivity is not stated.

We no longer produce levels with interchangeable vials set in brass or steel tubes as the price and maintenance of such levels is considerably more expensive than of levels with the vial cast into the frame. When a level of the former type becomes defective, the expense incurred in adjusting the replaced vial is greater than the cost of the vial proper, in addition, the base is often worn off to a certain degree and must also be readjusted. It is thus often cheaper to purchase a new level which has all the advantages of a new tool, than to repair damaged, worn-out instruments.

When purchasing new levels

do not only compare the price but also the sensitivity of the tools offered and remember that a level on which the sensitivity is not imprinted is subject to greater variations than an instrument on which the true precision is stated.

Levels for Testing Shafting No. 220



with parallel and cross vials and V-groove on base.

Sensitivity stated on metal plate on top of level.

For truing surfaces, shafts, cylinders, etc.

No. 220 with cross vial and **standard** parallel vial. The level for machine construction and shafting.

No. 220 HE with cross vial and **highly sensitive** parallel vial. The level answering high demands on sensitivity.

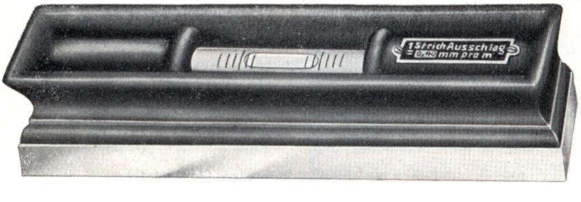
No. 220 EHE with cross vial and **extra sensitive** parallel vial for highest demands on sensitivity.

No. 220 HEHE with cross vial and **super-sensitive** parallel vial with insulated handle and parallel vial protector, for extreme accuracy.

No.	length . . . . mm	160	200	250	300	500*
	approx. weight of level . . . . kg	0.8	1.2	1.8	2.6	4.6
	approx. weight of wooden case g	250	330	400	460	900
220	**standard sensitivity**					
	1 division = approx. mm per meter	0.4	0.35	0.3	0.25	0.25
	Price					
220 HE	**highly sensitive**					
	1 division = approx. mm per meter	0.1	0.1	0.1	0.1	0.1
	Price					
220 EHE	**extra sensitive**					
	1 division = approx. mm per meter	—	0.04	0.04	0.04	0.04
	Price					
220 HEHE	**super sensitive**					
	with insulation and parallel vial protector					
	1 division = approx. mm per meter	—	0.02	0.02	0.02	0.02
	Price					
	wooden case					

* without cross vials

Levels for Plane Surfaces No. 221



with parallel vial (without cross level) and full base
Sensitivity stated on metal plate on top of level.

Most suitable for jobs in which no shafts are to be trued or where the surfaces to be trued are of such form that a prismatic groove in base would be of disadvantage.

No. 221	with **standard** parallel vial. The level for general use.
No. 221 HE	with **highly sensitive** parallel vial. The level for high requirements as to precision.
No. 221 EHE	with **extra sensitive** parallel vial. The level for highest demands on trueness.

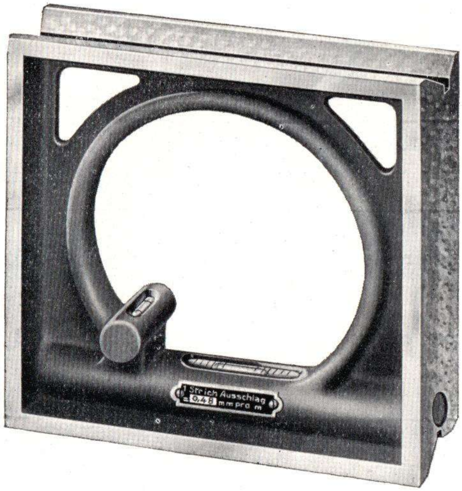
No.					
	length . . . . mm	160	200	250	300
	approx. weight of level . . . . kg	0.8	1.2	1.9	2.8
	approx. weight of wooden case g	250	330	400	460
221	**standard sensitivity**				
	1 division = approx. mm per meter	0,4	0,35	0,3	0,25
	Price				
221 HE	**highly sensitive**				
	1 division = approx. mm per meter	0,1	0,1	0,1	0,1
	Price				
221 EHE	**extra sensitive**				
	1 division = approx. mm per meter	—	0,04	0,04	0,04
	Price	—			
221 HEHE	**super sensitive**				
	with isulation and parallel vial protector				
	1 division = approx. mm per meter		0,02	0,02	0,02
	Price				
	wooden case				

Frame Levels No. 223

with parallel vial and cross vial, three sides with V-groove, one plane side.

Sensitivity stated on metal plate on top of level.

For truing horizontal and vertical surfaces and shafts.



No. 223 with cross vial and **standard** parallel vial. The level for mechanical engineering and shafting.

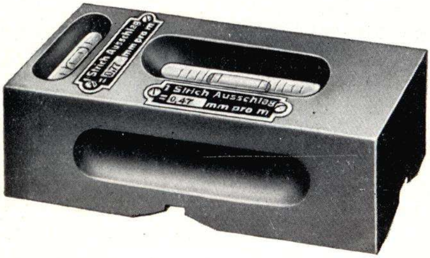
No. 223 HE with cross vial and **highly sensitive** parallel vial. The level for high requirements as to precision.

No. 223 EHE with cross vial and **extra sensitive** parallel vial. The level for highest demands on trueness.

No. 223 HEHE with cross vial and **super-sensitive** parallel vial, with insulated handle and parallel vial protector. The level for extreme accuracy.

No.					
	length of one side . . . . . . mm	100	150	200	300
	approx. weight of level . . . . kg	0.8	1.7	3.0	8.2
	approx. weight of wooden case g	290	530	600	2000
223	**standard sensitivity**				
	1 division = approx. mm per meter	0.4	0.4	0.35	0.25
	Price				
223 HE	**highly sensitive**				
	1 division = approx. mm per meter	0.1	0.1	0.1	0.1
	Price				
223 EHE	**extra sensitive**				
	1 division = approx. mm per meter	0.04	0.04	0.04	0.04
	Price	—			
223 HEHE	**super-sensitive,** with insulation and parallel vial protector				
	1 division = approx. mm per meter	—	0.02	0.02	0.02
	Price	—			
	Price of **wooden case**				

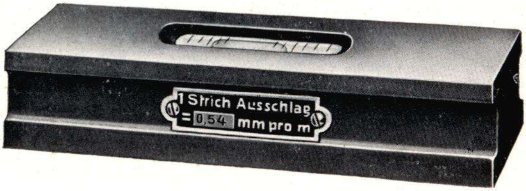
Crank Pin Levels No. 224 with standard parallel vial and cross vial and slotted V-grooves running parallel and at right angles the base. Sensitivity of both levels stated on metal plate on top of level.



Levels for truing crank pins. Applying level to crank pin in high and low positions and at both dead centers accurately shows position of pin and any variation. Width of base 40 mm.

No.				
	length . . . . mm approx. wt. of level . . . . . g approx. wt. of wooden box . g	60 375 135	90 580 145	120 780 160
224	**standard sensitivity** 1 division = approx. mm per meter Price	0.6 – 0.8	0.4 – 0.8	0.4 – 0.8
224 HE	**highly sensitive** 1 division = approx. mm per meter Price	0.2 – 0.8	0.1 – 0.8	0.1 – 0.8
	Price of **wooden case**			

Machine Levels No. 225 with standard parallel vial (without cross level) and plane base.



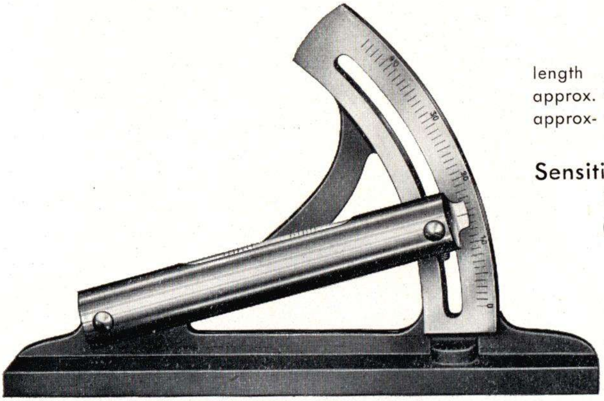
Sensitivity stated on metal plate on side of level.

This small level is very handy for setting up work on machine tools. Its high sensitivity permits quicker and more accurate work than with ordinary levels.

No.		
	length . . . . mm approx. wt. of level . . . . . g approx. wt. of wooden box . g	100 260 80
225	**standard sensitivity** 1 division = approx. mm per meter Price	0.4
225 HE	**highly sensitive** 1 division = approx. mm per meter Price	0.1
	Price of **wooden case**	

Level with Graduation in Degrees No. 230

measuring range 45⁰, frame of cast iron, vial in steel tube

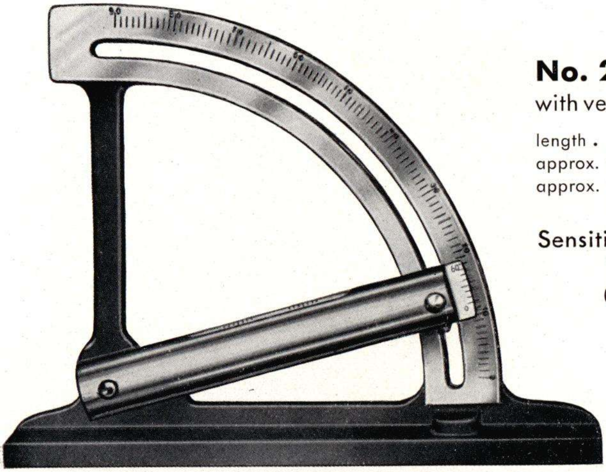


length	mm	200
approx. weight of level	kg	1.0
approx- weight of wooden case	kg	0.5

Sensitivity

1 division = approx.
0.35 mm per meter

Price incl.
wooden box



No. 231 measuring range 90⁰
with vernier reading of 10 minutes

length	mm	200
approx. weight of level	kg	1.4
approx. weight of wooden case	kg	0.6

Sensitivity

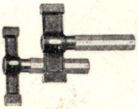
1 division = approx.
0.35 mm per meter

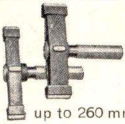
Price incl.
wooden box

Additional Stiefelmayer Products:

cylindrical limit plug gage

flat internal limit gage





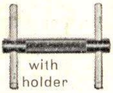
up to 260 mm

up to 100 mm

standard end measuring rods

with insulated handle

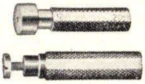
up to 3 mm



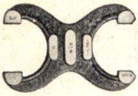
with
holder

ring gage

setting discs and plugs

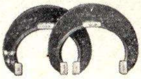


limit snap gages

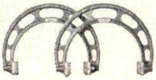


3,5 - 100 mm

1 - 100 mm



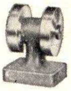
100 - 200 mm



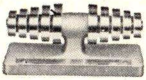
to 400 mm

100 - 200 mm

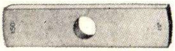
to 400 mm



2 gage stands



multiple gage stand



gaging blocks

taper gages without tang

short taper plug

thort sleeve

long sleeve

taper gages with tang

taper plug with tang

sleeve with
uni-lateral tang

sleeve with
bilateral tang

thread gages

standard thread
plug gages

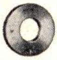
limit plug gages

adjustable effective
diameter snap gage

core insert
plug gage

testing
plug gage

standard ring
thread gage



"go" ring
thread gage

limit snap gages
with thread rollers

snap gage for
outside bolt diameter

wear testing
plug gage

setting
plug screw

limit setting
plug screw